MAY 1924 20 CENTS

PER
NH
1
C176
v. 28
No. 5

THE CAMERA

THE PHOTOGRAPHIC JOURNAL *of* AMERICA

CAMERA BUILDING, FRANKLIN SQUARE
PHILADELPHIA

RONIX

A DAYLIGHT PRINTING PAPER

TONES ITSELF
YOU ONLY FIX IT

The simplest of all printing papers
giving the most artistic tones
with the least possible trouble.

A DISH—SOME HYPO—PLENTY WATER

IS ALL THE APPARATUS YOU NEED

CAMP DIRECTORS—SUMMER SCHOOLS—BOYS' AND GIRLS' CAMPS—CAMPERS AND VACATIONISTS, YOU NEED RONIX—DEVELOP YOUR FILMS OR PLATES AT NIGHT AND PRINT THEM THE NEXT MORNING ON RONIX

SEND FOR SAMPLE OFFER

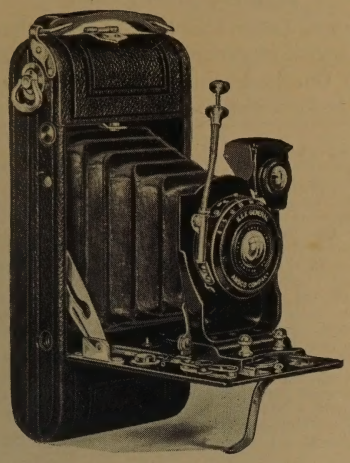
GEVAERT

THE GEVAERT COMPANY OF AMERICA
INCORPORATED
423 to 439 West 55th Street, New York

CENTRAL STATES BRANCH AND STOCK DEPOT
GEORGE W. MACKNESS CO., 180 North Wabash Ave., Chicago

(Call it Gay-Vert)

(Call it Gay-Vert)



No. 1 Special Folding Ansco

A New 1924 Model

THE No. 1 Special Folding Ansco, new this year, is identical with the No. 1 Ansco Speedex ($36) and the No. 1 Ansco Super Speedex ($51 and $70) except for lens and shutter. The lens and shutter are the same as on the No. 1 Folding Ansco—Ansco F7.5 Anastigmat and Ilex General, giving speeds of 1/5, 1/10, 1/25, 1/50, 1/100, Bulb and Time.

No. 1 Special Folding Ansco - - **$25**

2¼ x 3¼ Pictures; uses 4 A Ansco Film, same size as 120; a masterpiece of camera-building

Of his No. 1 Ansco Super Speedex an owner writes (and this is typical of many letters): "It went to Europe this last summer, and so far I have not seen, either here or there, any other by any make for which I would part with it in exchange." This is the same camera except for lens and shutter, which, however, are particularly well adapted to getting equivalent results. And the price is only $25.

For Your Friend Who Wants a High-Grade Pocket Camera Without Complications

THE No. 1 Ready-set Ansco, a new model shown below, is one of the handsomest and most beautifully finished cameras we have ever made, equipped with special Ansco Anastigmat, but practically foolproof. Load, aim, fire, and wind the film—that tells the story. No focusing. One shutter setting only—choice between INST and TIME. When pointer is moved to TIME, smaller stop is automatically obtained. Lens has ample speed for all the snapshots your friend will wish to take, and new design gives remarkable depth of focus. Price includes grey suede case. Pictures 2¼ x 3¼. Almost impossible to go wrong with this No. 1 Ready-set Ansco. Recommend it—price $25.

No. 1 Ready-Set Ansco - - - - - **$25**

2¼ x 3¼ Pictures; uses 4 A Ansco Film, same size as 120; Ansco Anastigmat; grey suede case included

The Automatic Ansco

Illustrated booklet describing fully the new Automatic Ansco now available. Free on request.

Ask for new catalog also.

Ansco Photoproducts, Inc., Binghamton, N. Y.

SALE AND EXCHANGE

Advertisements under this heading, five cents per word; minimum charge seventy-five cents. Count every word and initial. No display. Cash with order. 10th of the month last date for receiving copy.

KODAK BARGAINS—New and used, all sizes. The Stiller Co., Stiller Bldg., Green Bay, Wis.

MAKE MONEY WITH YOUR CAMERA. Send stamp, K. Lancaster Studios. Box 436, Los Angeles, California.

FOR SALE.—4 x 5 Camera, complete; lens, shutter, holders, tripod, $10.00. T. A. Sheldon, 11 Waterman Street, Providence, R. I.

USE McCormick's Self-adjusting Lantern Slide Mats, per pad of 100 pairs, $1.00; 25 pairs, 35 cents postpaid. Of your dealer or A. C. Wilmerding, 27 Maiden Lane, New York.

PHOTOGRAPHIC PRINTS quickly and easily made at less cost than the general method with film or plates. Photo and instructions sent on receipt of 30 cents merely to cover expense. W. B. Wilkinson, Clarkson, N. Y.

KODAK HOSPITAL. All kinds of Kodaks, cameras and shutters repaired. Second-hand cameras and lenses. Bellows made to order. Work done for the trade. J. H. Moyse, Room 23, 115-117 Nassau Street, New York City.

RETIRING FROM BUSINESS, I offer, at the lowest prices, all remaining stock of lenses, cameras, etc., most of them new and of the best imported brand. Stereoscopic outfits a specialty. Madeline, 620 Riverside Drive, New York City.

WANTED.—Photographic salesman with experience, ability, integrity, by one of the oldest supply houses in the business. Give full details and salary or commission desired in first letter. Address Box 1095, care of THE CAMERA.

FOR THE ART STUDENT.—Postcard reproductions in natural colors of oil paintings. A great aid in the study of line, form and composition. Portraits, landscapes, genre, nudes, etc. Send dime for samples. Howard Art Shoppe, 75 Howard Street, Newark, N. J.

WE CAN PAY you the highest price for your Camera or Lens. Furnish us with the best description you possibly can and you will receive a cash or trade offer immediately. If you prefer, you can send your goods subject to our inspection and then, if our offer is unsatisfactory, we will return your goods, charges prepaid. Central Camera Co., 112 S. Wabash Avenue, Chicago, Ill.

ASK your photographer of W. S. Lively and his Great Southern School of Photography. There is no calling open to ambitious young men and women today that upon so small a capital offers such returns in money, rapid promotion, usefulness and personal satisfaction as does photography. The demand for graduates exceeds the supply. Write for catalogue.

SOUTHERN SCHOOL OF PHOTOGRAPHY
McMINNVILLE, TENNESSEE

"Perfect Negatives and How to Make Them," Dr. B. T. J. Glover. A pamphlet of seventy-two pages concisely but clearly setting forth the details of manipulation, to effect negative production, so controlled that the result may be correspondent to the intentions of the photographer. It is therefore of pertinent value to the pictorialist who considers the negative a means to a certain end and not merely the end in itself, a thing of technical excellence, but incapable of translating in the print the intention of the photographer. **Price 60 cents postpaid.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

"The Way to Successful Home Portraiture"
Send for this interesting folder telling how to get into home portraiture, together with full information about
Halldorson Portrait Flash Lamps
Used by leading photographers everywhere
Folder and information free
THE HALLDORSON COMPANY 1774 Wilson Ave. CHICAGO

ALEXANDER BROTHERS
PHOTO SUPPLIES
Cameras and Lenses bought, sold and exchanged
CAREFUL DEVELOPING AND PRINTING
1127 Chestnut Street, Philadelphia, Pa.
No Catalogues—just tell us your wants

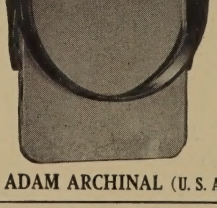
Photography and Fine Art, Henry Turner Bailey. This book treats exclusively of the artistic phase of photography. Its purpose is purely aesthetic. Nothing in it refers to the technical means or mechanical methods for effecting artistic expression. It presents clearly and intelligibly the principles of art and their application to camera practice, recognizing the features incident upon the use of the material and instruments employed. The excellent feature of the book is in its sanity of treatment of the subject of art and photography. It stresses the importance of a thorough understanding of the rules, and cautions the aspirant not to be beguiled into taking flights into super art before getting understanding of the means of plain sailing, by close observation of the conventional chart. It is refreshing and inspiring to have a work of this kind which may really help the student of art photography to a successful outcome. **Price, cloth, $2.50.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

"Print Perfection and How to Attain It," Dr. B. T. J. Glover. This little book of less than eighty pages is replete with valuable information not only for the beginner, but also for the advanced worker. It is intended to be supplementary to Dr. Glover's work on "Perfect Negatives," but it is complete in itself. Written in the same concise, clear manner, it gives instruction for production of the highest possible printing quality. The photographer will find in it means for overcoming the difficulties attendant upon print manipulation. **Cloth, $1.25; paper covers, 75 cents postpaid.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Motion Picture Projection, by T. O'Conor Sloane, Ph.D., LL.D. The enormous growth in number of motion picture theatres has created a large and increasing demand for operators. It is an interesting, good paying field and requires but a short time to qualify as a projector. Dr. Sloane is Associate Editor of Practical Electrics and Science and Invention Magazines. The above book of Motion Picture Projecting includes Electricity, Optics, Projecting Machines, the Intermittent Movement of all kinds, and the fullest details of practice. **Price, $5.00.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

The Science and Practice of Photographic Printing, by Lloyd I. Snodgrass, B.S. The newest and most complete book on photographic printing—by a practical photographer of wide experience. Formulae and definite working instructions are given, together with a clear scientific explanation of the underlying principles. 304 pages, 53 illustrations. Bound in cloth. **Price, $3.00, postpaid.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Burnet's Essays on Art. 160 pages; 135 illustrations; handsomely printed on fine wood-cut paper; bound in art canvas. **Price, $2.00. Postage 15 cents.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia



RAMSTEIN
GRADUATED FILTERS
(Patented in U. S. and Foreign Countries)

Ramstein filters are permanent (non-gelatine), optically flat, and perfectly graduated.

They do not affect focus, definition or exposure. Write for circular and prices.

ADAM ARCHINAL (U. S. Agent) 1409 Broadway, New York

Our Motto: "Quality and Promptness"

NEGATIVE RETOUCHING

Portraits Finished in Any Style

W. H. MICHENER

908 WALNUT STREET, PHILADELPHIA

Cinema Handbook, by Austin C. Lescarboura, managing editor "Scientific American." This well-represented book of compact dimensions gives to the non-professional understanding and insight into the methods employed to produce the wonderful results seen accomplished upon the screen. Emphatically, this little pocket edition contains more than is to be had from the reading of many books on the subject. It is a handbook in the real sense of the word. Flexible cover, 507 pages, gilt edged, profusely illustrated. **Price, $3.00, postpaid.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Moving Pictures, How They Are Made and Worked, by Frederick A. Talbot. New edition, completely revised and reset. Numerous illustrations; 430 pages. A veritable encyclopedia of the moving picture art. Everything in this volume is shown in a simple, lucid manner, easily understood. It will increase any reader's enjoyment of the "movies" and introduce him to the innermost secrets of the wizard's silent drama. To those who are interested it will open up a new field of work. It tells of the romances, the adventures, the great preparations of marvelous ingenuity and the hundreds of other things that go into the making of moving picture plays. The object is a popular account of everything concerning the subject—trick-pictures and how they are produced; pictures in color; pictures that move and talk; the making and costs of the most elaborate "sets" and studio equipment; the risks taken by photographers and players; the secrets of many sensational climbing and jumping feats; what the audience does not see in many daring wild animal films, and a great many other inside facts the "movie" patron delights in knowing. Although the more popular aspects of the industry are described at length, the educational, scientific and instructional applications of the art have not been ignored. **Price, cloth, $3.50.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

FOR ALL CAMERAS

"Dear Mr. Harvey: New York City.

"After trying practically every Exposure Meter in every part of the world, I finally stumbled on yours, and it *works right* and is the *only one* that always gives exact results. Thank you, Mr. Harvey. I only paid $2.00 for it and every time I look at my plates, I feel I owe you money.

"Sincerely, G. S."

Your dealer or G. L. Harvey, 105 S. Dearborn St., Chicago

The Commercial Photographer, by L. G. Rose. A work by a thoroughly competent and widely experienced commercial photographer of the highest reputation. The book will be found of pertinent interest not only to the trade photographer but also to the specialist. The application of photography is considered in its bearings upon the commercial man, the architect, the tradesman, the physician, the lawyer and the scientist, by one who has had extensive experience in different kinds of work required. 148 pages, 85 illustrations. **Price, in cloth, $4.00 per copy, postage 15 cents extra.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

The Air Brush in Photography, by George F. Stine. The most comprehensive work ever written on work with the Air Brush, especially as applied to photography, working up enlargements, etc. The author is known as one of the most expert workers with the Air Brush in this country, and the series of 32 illustrated lessons, which forms a considerable portion of the book, is the most detailed and carefully worked out course of instruction that could be imagined. With the help of this book any photographer can learn to use the Air Brush. 143 pages, 45 illustrations, bound in cloth. **Price, $2.50.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

British Journal of Photography Almanac, 1911, 1913, 1914, 1918. **Paper covers, 50 cents each.** 1900, 1901, 1909, 1913, 1915, 1916. **Cloth bound, 75 cents each. Postage, 10 cents per copy.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Photography as a Scientific Implement. This book is the collaboration of thirteen authors, each an expert in his line. The first four chapters are concerned with the development of the plate and the optical and chemical features of the subject, and are invaluable to every serious worker, as each is an authoritative summary of practically everything of importance on the subject. The remaining ten chapters are concerned with the applications of photography to various branches of science and industry. It is without doubt one of the most valuable photographic publications in print and one which should be in the possession of every photographer. **Price, cloth, $9.00.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Photography for the Amateur, by George W. French. An indispensable guide for the amateur—and written so he can understand it. Of exceptional value also to the experienced photographer for the purpose of frequently checking up on his methods and procedures. Study of cameras and lenses; correct methods to follow in every phase of photography—lighting, exposure, developing, printing, mounting and enlarging. An entire chapter devoted to Making the Camera Pay—what will sell and where to sell it to advantage. **Price, $3.50.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Smashing Reductions

Send for Bargain List No. 25

NEW YORK CAMERA EXCHANGE

109 Fulton Street *New York, N. Y.*

Principles of Pictorial Photography, by John Wallace Gillies. This well-known Pictorialist has made a notable contribution to Art in Photography in this exceptional book. While he emphasizes that Pictorial Photography can not be achieved by any "multiplication table," he so clearly sets forth its principles that any photographer, amateur or professional, can see for himself just what makes a picture or, on the other hand, spoils it. Profusely illustrated with representative studies from the most noted Pictorialists. **Price, $3.50.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Practical Color Photography, by E. J. Wall, F.C.S., F.R.P.S. The continuous interest in photography in natural colors, and the want of a complete and comprehensive working manual on this subject, have led to the preparation of the book here announced, a thoroughly practical work which gives little space to history and theory, but does contain practical working directions, including every detail of formula and manipulation, for every process of natural color photography which has any claim to practical utility or any theoretical importance. Bound in red cloth. **Price, $3.00.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

The Complete Photographer, by R. Child Bayley. New Revised Edition. This work deals with those aspects of photography which interest the amateur—his apparatus and materials and their use, the evolution of modern photography, pictorial and technical work, exhibitions and societies. This edition is revised throughout and the sections on the hand camera and on orthochromatic and color photography are completely rewritten. The illustrations are representative of the best pictorial work, and include a reproduction of an oil print in colors. 420 pages. **Price, $5.00.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

American Annual of Photography. Shop worn copies, but in good condition, 1886, 1887, 1892, 1894, 1895, 1897, 1906, 1911, 1912, 1913, 1916, 1917, 1918, bound in cloth, **$1.00 per copy;** 1892, 1912, 1913, 1914, 1915, 1920, bound in paper cover, **50 cents per copy. Postage, 10 cents per copy extra.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

FOR PORTRAITS

USE

ACME KRUXO

Send for Booklet

KILBORN PHOTO-PAPER CO.

120 First Avenue, Cedar Rapids, Iowa

Second-Hand Lenses

ALL MAKES AND SIZES

Work Just as Well as New Ones

SEND FOR OUR BARGAIN LIST

HYATT'S PHOTO SUPPLY HOUSE, St. Louis, Missouri

The Portrait Studio, Fourth Edition. A small book (5 x 7¼ inches) crammed full of information on everything the portrait photographer of experience wants to know relative to the construction of studio arrangement of light, and the various contrivances for manipulation in getting effective portraiture. The essential only is considered; but all that is needed is here. **Paper covers, 75 cents, postpaid.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Pictorial Photography: Its Principles and Practice, by Paul L. Anderson, E.E., lecturer of the Clarence H. White School of Photography. Every photographer who wishes to do more than merely "push-the-button," will find discussed in this volume the very points on which he wants helpful suggestions and definite instruction. It is written from a scientific standpoint, not too elementary on the one hand nor too ultra-technical on the other. 302 pages, octavo, cloth. **$3.00, postage 15 cents.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

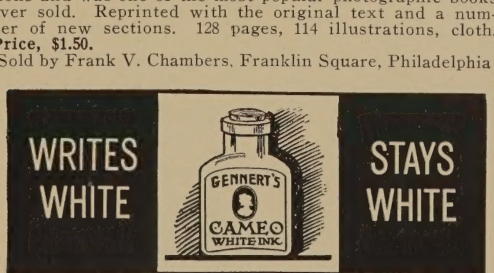
The Fine Art of Photography, by Paul L. Anderson, E.E. One of the best books on photography ever published and right up to the minute. 24 illustrations, 312 pages, cloth. **Price, $3.00—postage 15 cents.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Pictorial Compositions, by Henry R. Poore, A.N.A. This book is recognized as the authoritative work published in English on the subject of Composition. It has maintained the cordial endorsement of the leading artists and critics of this country and of England, where it has had a continued demand. The book sets forth an analysis of pictorial processes, which, while of special interest to the artist and photographer, is designed also to aid the layman in his appreciation of the pictorial. Thirteenth edition; revised; 282 pages, 83 illustrations. **Cloth, $4.00, postage 15 cents extra.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Optics for Photographers, translated from the original by Hans Harting, Ph.D., by Frank R. Fraprie, S.M., F.R.P.S. The writer of this book starts with the fundamental laws of the propagation of light, and carefully and logically carries the reader through the principles of geometrical optics to a complete explanation of the action of all types of photographic lenses, and a description of their qualities and defects. Only the simplest mathematics is used, and this sparingly. Bound in cloth, **$2.50.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

The Painters' Series—Your chance to get a thorough knowledge of composition by studying the Old Masters. Our selection is limited, but we have been fortunate in securing copies of Meissonier, Botticelli, Del Sarto, Morland, Reynolds, Raeburn, Jan Steen, Rembrandt, Teniers. **Price, 50 cents.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Photographic Amusements, by Walter E. Woodbury. This interesting book, describing many novel, ingenious, amusing and ludicrous effects obtainable with the camera, has been out of print for several years, though previous to that time it had passed through many editions and was one of the most popular photographic books ever sold. Reprinted with the original text and a number of new sections. 128 pages, 114 illustrations, cloth. **Price, $1.50.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia



Cash From Your Camera, edited by Frank R. Fraprie, S.M., F.R.P.S. The only book on marketing photographs now in print. Full instructions on preparing prints for market, with much information as to the various classes of buyers and the kind of material they want. An authentic and detailed list of the wants of all important picture buyers in the United States at the present time. A verified list of several hundred firms listed elsewhere as buyers of photographs who are no longer in the market. This is a great postage and time saver. Everyone who desires to make a little money from his photography should have this book. Bound in paper. **Price, $1.00.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Motion Picture Photography, by Carl L. Gregory, F.R.P.S. A usable standard treatise for either professionals or amateurs. Carl L. Gregory was formerly Chief Instructor in Cinematography, Signal Corps School of Photography, Columbia University, New York. He is equally well known in the Motion Picture field for his unusual ability as an author. Special chapters were contributed by Charles W. Hoffman and by Research Specialists of the Research Laboratories, Eastman Kodak Company. **Price, $6.00.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Light and Shade and Their Applications, by M. Luckiesh. The present work by Mr. Luckiesh considers primarily the scientific phase of light and shade. He directs you how to observe, record and control illumination to produce the varied results. The subject is so presented as to be fully within the comprehension of those who have not received a particular scientific training. This is a book the photographer has long desired. 135 illustrations, 10 tables and 266 pages. **Price, cloth, $3.00, postpaid.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

A New Art for Coloring Photographic Prints and Enlargements

"CASTELL"

POLYCHROMOS PENCILS

PRODUCE MARVELOUS RESULTS

Made in sixty different brilliant shades *Send for circular*

A. W. FABER, Inc., Newark, N. J.

The Conception of Art, by Henry R. Poore, A.N.A. The reading of the man interested in art is beset by many counter opinions. This book, in its comprehensive view, seeks to supply him with the basic facts and principles upon which art rests and which must stand at the foundation of any art creed. It not only helps the reader to know what art is, but in its chapter on "Misconceptions in Art" proves how frequently the popular mind wanders blindly among current fallacies. These are later treated at length. Second edition; revised; 222 pages, 100 illustrations. **Cloth, $3.50, postage 15 cents extra.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Practical Amateur Photography. William S. Davis. We have no hesitation in stating that this is one of the best books for the advanced amateur as yet published. The student is told, not only how a thing should be done, but also why it should be done. The chapters on composition and the artistic treatment of special subjects are very valuable inasmuch as they are record of the personal experience of its author who, in addition to being an enthusiastic photographer, is at the same time, an accomplished painter in oils. The glossary and bibliography, together with a complete index, make the book a convenient source of reference. **Price, cloth, $2.00.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Visual Illusions, by M. Luckiesh. A book of pertinent interest to the photographer. A valuable aid to control factors in work, which antagonize true rendition of things before the camera. A guide for practical application of psychological peculiarity of personal observation to expression of reality—along the lines of art. It will be of particular value to the portraitist in showing the need to pay attention to the deception occasioned by natural vision in the production of pictorial effect so as to counteract their influence. 252 pages; 100 illustrations, durably bound in dark blue cloth. **Price, $3.00, postpaid.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

Photo Miniature—Out-of-Print Numbers in stock. **.60 cents per copy.**
Sold by Frank V. Chambers, Franklin Square, Philadelphia

THE CAMERA

TRADE MARK REGISTERED

THE PHOTOGRAPHIC JOURNAL OF AMERICA

THE CAMERA BUILDING, 636 FRANKLIN SQUARE (Cor. 7th and Race Sts.) PHILADELPHIA

FRANK V. CHAMBERS, Editor and Publisher JOHN BARTLETT, Associate Editor

Yearly subscriptions, in advance, postage paid, United States, Canada, Mexico, Cuba, Philippines and Porto Rico, $2.00. Single copies, 20 cents. All other countries, $2.50 per year.

Entered at Philadelphia Post Office as second-class matter.

TABLE OF CONTENTS FOR MAY, 1924

Standardizing Bromoil . . . . . Miles J. Breuer, M.A., M.D., 259
Fido, Pussy—Meaouw and Co. . . . . C. H. Claudy 273
Along the Beach with a Camera (Illustrated) . . . . . L. W. Brownell 280
Large *versus* Small Cameras (Illustrated) . . . . . Edward Conner 289
Wayside Findings (Illustrated) . . . . . William S. Davis 292
Rendition of Texture 297
Remarks on Some Photographic Fundamentals 298
Our Print Criticism Department 300
A Photographic Encyclopedia 307
Questions and Answers 308
Views and Reviews 312
The Stand Camera 315
A Wide-Angle Tip 315

Technical and Scientific Notes

The Acid-fixing Bath 316
What Affects the Toning? 317
Developers for the Bromoil Print 319
On the Duration of Fixing of Development Papers 319
A New M-Q Formula for use with Phenosafranine 322
The First Anastigmat 322

ILLUSTRATIONS

"A Mountain Home" . . . . . Floyd Eugene Vail 296

From the One Man Show at The Camera Club, New York—(Work of John H. Garo)

"Boston Art Museum" 261
"The Poplars" 262
"Sunset" 263
"Rev. Edward Everett Hale" 265
"The Old Bridge" 266
"Morning on the River" 268
"Decorative Design" 269
"Portrait — Miss B" 271
"Phillip Little" 272
"Approaching Storm" 275
"Tree Study" 276
"Baby Morss" 277
"Still Life" 278
"Flood" 279
"Master A. Ames" 281
"Church Around the Corner" 282
"Edge of the River" 285
"The Lagoon" 286
"Winter Landscape" 289
"Early Ice" 290

THE GETTY CENTER
LIBRARY

IDENTIFICATION

Mr. Progressive Photographer

Add **The Willson Magazine Camera** to your present equipment. Increase your **PROFITS** by photographing pupils of Schools, College Students, Graduating Classes, members of Organizations, Clubs, etc.,

Capacity, 2,200 exposures at one loading

"THE WILLSON WAY"

Positive identification of each subject if desired

GROUP PICTURES made from ORIGINAL negatives

Write for Catalog Dept. B

Samples of finished work mailed on request

VICAM PHOTO APPLIANCE CORPORATION

1224 BELMONT AVENUE, PHILADELPHIA, PA.

The Camera Print Criticism

¶ Prints for criticism may be sent in at any time. They need not be mounted.

¶ Send *only one print* in any one month. It *must* be accompanied by a coupon.

¶ Prints will *not* be returned. We reserve the privilege to mark or trim prints to suit requirements of criticism.

¶ If blue prints, sepias or prints on linen surface papers are sent. they must be accompanied by a smooth print on a printing medium that will make good reproductions.

¶ Use attached coupon only and supply all required data. *Prints not accompanied with* **COMPLETE** *data will not be criticised.*

¶ Write *only* your name on back of print.

¶ Give time in Standard Time. *Do not use the so-called* Daylight Saving Time.

Title .....
Where Made .....
Maker .....
Address .....
.....
Camera .....
Lens ..... *f* .....
Shutter .....
Exposure ..... seconds at stop *f* .....
Date ..... Hour .....
Light Conditions: (Bright, Dull, Cloudy) .....
Plate or Film .....
Developer .....
Printing paper .....

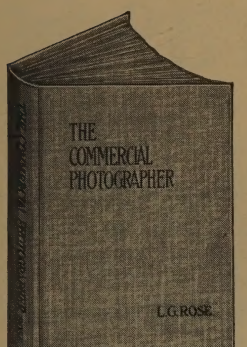
CRITICISM DEPARTMENT

636 Franklin Square **THE CAMERA** Philadelphia

The Commercial Photographer

By L. G. ROSE

148 Pages *85 Illustrations*



Price, in cloth, $4.00 per copy
Postage 15 cents extra

Including Price Lists for Commercial Work in Two Large Cities

FRANK V. CHAMBERS, Publisher
Franklin Square, Philadelphia

A work by a thoroughly competent and widely experienced commercial photographer of the highest reputation.

Every phase of the subject is treated with a view for presentation of the essentials. The various appliances discussed, best methods of exposure, illumination and graphic presentation to ensure a successful outcome.

It is a book essentially for the commercial man and meets every requirement. Profusely illustrated with examples of work of varied kind.

The book will be found of pertinent interest not only to the trade photographer but also to the specialist. The application of photography is considered in its bearings upon the commercial man, the architect, the tradesman, the physician, the lawyer and the scientist, by one who has had extensive experience in different kinds of work required.

List of Subjects Treated:

Equipment
Exteriors
Panoramas
Store Windows
Furniture
Cut Glass
Photography of Colored Objects
Dark-room Work
Blue Prints, Vandykes and Photostats
Prices
Lenses
Interiors
Machinery
The Studio
Stoves
Silverware
Copying
Blocking, Staining and Lettering
Prints and Coloring
Building Business
Plates and Films
Banquets
Automobiles and Trucks
General Merchandise
Monuments
Legal Photography
Enlarging
Printing
Advertising Photography

OPINIONS OF THE PRESS

"Let me say that I have read Rose's book 'The Commercial Photographer' with a great deal of pleasure. I really believe it is one of the best books I have come across, mainly, because it is practical rather than theoretical. I consider it an indispensable guide for anyone seriously engaged in photography."—*Austin C. Lescarbourax*, Managing Editor *Scientific American.*

"In scope and wealth of detail this is by far the most comprehensive handbook to commercial photography thus far published. It has the greater merit of being thoroughly practical in its information, giving the working methods, formulæ, and experience of its author, a well-known expert in this special field. Mr. Rose has given us a manual and reference book which should be on the bookshelf of every professional and commercial photographer."—*Photo-Miniature.*

"The reader is taken step by step through twenty-nine chapters, each one dealing with a distinct phase of the subject, accompanied with suitable illustrations. Chapter twenty-eight and twenty-nine are reserved for business and very important business at that; twenty-eight deals on prices; twenty-nine on business building. It is a book that every photographer should have."—*Camera Craft.*

"Mr. Rose deserves well of commercial photographers, for he has written an admirable practical manual on the photography of the wide diversity of subjects which the commercial photographer is asked to undertake. And the publishers have done well by their author, for they have provided a luxurious volume, printed throughout on heavy art paper and profusely illustrated on almost every page with half-tone reproductions. The photographer who is learning to qualify himself for this branch of his calling must be a most unreceptive individual if the cost of the book is not returned to him many times over in the knowledge and guidance which it gives him."—*The British Journal of Photography.*

"It must be admitted that hitherto the commercial photographer has not been too well catered for in the way of text books, but this publication meets the requirements. It is quite the best that we have yet seen, it covers the ground very completely from the apparatus required to the production of photographs of almost every kind for commercial purposes."—*The Photographic Dealer* (London).

"Mr. Rose has handled a very extensive subject in a comprehensive way. The commercial photographer in the larger cities is of course a specialist, entirely distinct from the portrait man and with totally different problems. In some cases, demands are so great that the photographer confines himself to one line of merchandise to the exclusion of others, as for instance, furniture, etc. The photographers who invest in this book can turn a profit on the many suggestions it contains."—*American Photography.*

"This is by far the best book published on the subject of commercial photography. It is written by an expert-photographer in commercial work, who is likewise a capital writer.

"A careful examination of this admirable work convinces us that the object-lessons here presented constitute in themselves a real course in commercial photography, which appeals not only to the student interested in this department of photographic work, but to the commercial photographer or, as he is generally called, the all-around photographer."—*Photo-Era Magazine.*

"This new book by L. G. Rose will find a ready demand. It is splendidly printed and illustrated, and we commend it most highly to our readers, both portrait and commercial. The portrait man should have it handy for he never can tell when he will be called upon to do some bit of work out of the regular, and this book will help him out at any and all times; the commercial man can afford to have it on hand, for many subjects on which he probably is not quite conversant are covered thoroughly by Mr. Rose."—*Abel's Photographic Weekly.*

"We recommend the reading of this book to all photographers who are engaged in commercial photography or who are likely to undertake it. The amateurs also would do well to learn from this expose of methods, the procedures and tricks of the hand by reason of which one is able to make good reproductions of objects which appear difficult and at first apparently impossible. If it were translated in the French, this work would certainly obtain wide popularity in all countries where French is spoken."—*Photo Revue*, Paris.

ORDER A COPY TODAY FROM

Atlantic Photo Supply Co., 319 N. Howard St., Baltimore, Md.
J. Sussman Photo Stock Co., 223 Park Ave., Baltimore, Md.
American Photography, 428 Newbury St., Boston, Mass.
Robey-French Co., 38 Bromfield Street, Boston, Mass.
Bass Camera Co., 109 N. Dearborn Street, Chicago, Ill.
Central Camera Co., 124 S. Wabash Ave., Chicago, Ill.
Sweet, Wallach & Co., 133 N. Wabash Ave., Chicago, Ill.
Fowler & Slater Co., 806 Huron Road, Cleveland, O.
C. Weichsel Co., 1611 Main Street, Dallas, Tex.
Briggs Photo Supply Co., 914 Grand Ave., Kansas City, Mo.
Howland & Dewey Co., 510 S. Broadway, Los Angeles, Cal.
W. D. Gatchel & Sons, 5th and Walnut Sts., Louisville, Ky.
O. H. Peck Co., 112 S. 5th Street, Minneapolis, Minn.
Chas. G. Willoughby, Inc., 110 West 32d St., New York.
Geo. Murphy, Inc., 57 East 9th Street, New York.
New York Camera Exchange, 109 Fulton St., New York.
Schultz Novelty & Sptg. Goods Co., 122 Nassau St., N. Y.
Tennant & Ward, 103 Park Avenue, New York.
Standard Photo Supply Co., 125 Baronne St., New Orleans.
John Haworth Co., 1020 Chestnut Street, Philadelphia.
W. S. Bell & Co., 412 Wood St., Pittsburgh, Pa.
Marks & Fuller, 45 East Avenue, Rochester, N. Y.
Hirsch & Kaye, 218 Post St., San Francisco, Cal.
E. W. Stewart & Co., Tacoma and Seattle, Wash.
Francis Hendricks Co., 116 E. Fayette St., Syracuse, N. Y.
Hyatt's Photo Supply Co., 417 N. Broadway, St. Louis, Mo.
Gross Photo Supply Co., 1715 Spielbusch Ave., Toledo, O.
Photo-Era Magazine, Wolfeboro, N. H.

FRANK V. CHAMBERS, Publisher, 636 Franklin Square, Philadelphia

Please mention "The Camera" when Corresponding with Advertisers

Ica Cameras

THERE has been a revision in **Ica** camera prices—a downward revision on practically all models. At the opening of the camera season this will mean much to those who have craved an **Ica**—it will mean a summer of the most fascinating photography with one of the most perfect picture making instruments money can buy.

Never have **Ica** cameras been so good; never have they had so many distinctive improvements as this year. If there is such a person as a camera architect, **Ica** must have a good one, for each **Ica** camera has individuality and has general characteristics that are distinctly **Ica.** They look good, they feel right, their shutters sound truthful and under their covering of the finest grain leather is structural strength that will endure. No cameras ever had better lenses than the Tessars—genuine Carl Zeiss Tessars, made in Jena. Then there are the Dominar and the Hekla, both excellent anastigmats. Most **Icas** have iconometer direct view finders, far superior to the reflecting type, because they show the view to be photographed full size from the eye's level, and at the same time indicate any movement of the front. The new construction of the front of the 3¼ x 4¼ and 3¼ x 5½ models is a marked improvement. It's stronger, absolutely rigid and easily adjustable by screw adjustment. These

HAROLD M. BENNETT, U. S. Agent,

cameras, including the roll film models, are supplied with *f*4.5 Tessar or Dominar lenses.

There will undoubtedly be a shortage of **Ica** cameras this year, for better cameras at lower prices will appeal to thousands and a scarcity of many models will undoubtedly be the result, so select your **Ica** now.

Citing some of the **Ica reductions,** there is the popular Icarette C using roll films 2¼ x 3¼. With Dominar lens it is now $52.50, and with Tessar *f*4.5 the price is $67.50. The Icarette D size 2½ x 4¼ is $57.50 with Dominar, or with Tessar *f*4.5 it is $72.50. The Halloh, Lloyd and Nixe are unusual roll film models. The Halloh, a 3¼ x 4¼ instrument, with its new front, iconometer finder, ability to use roll film or plates, fitted with Tessar *f*4.5 lens and Compur shutter, is an exceptional outfit at $80.00. The Nixe A is like the Halloh, save that it has a long bellows. The Nixe B is of the same type, only larger, making postcard size pictures. These instruments have been substantially reduced in price. Then there are the **Ica** plate models including the Ideals, Trona, Trix and Juwel, which have been reduced. The popular Ideal A, for example, with Carl Zeiss Tessar *f*4.5 is now $75.00 instead of $87.50. **A new Ica is the V. P. Icarette, a new vest pocket size roll film model.**

See the Ica line at any good camera shop, and if you want better pictures you cannot help but want an **Ica.**

153 West 23rd Street, New York City

The Harrold Exposure Scale

NOW FURNISHED IN TWO MODELS

The Advanced Model is for Plates and Films. It is the most complete and exact meter made. Thousands already in use and owners delighted with results.

The E-Z Model is entirely new, and is for Films only. It is the simplest to operate, only two easy little movements and the answer is before you in plain figures.

Both models provide for every condition, including even a ray filter when desired. Made of celluloid in handsome colors. Price, $1.00 each. For sale by all leading dealers. G. W. Mackness Co., 180 N. Wabash Ave., Chicago, Central States Distributors.

Before you forget, send me your address for free circulars and let me help solve all your exposure problems.

ELMER HARROLD, LETONIA, OHIO

BECOME A PROFESSIONAL PHOTOGRAPHER

MOTION PICTURE COMMERCIAL

PORTRAITURE NEWS-PHOTO

Earn $35 to $125 a Week

Three to six months' course. Day or evening classes. Easy terms if desired. Largest and Best School of Photography. An interesting, illustrated booklet (free) on choosing a vocation and the exceptional opportunity Photography offers. Ask for Catalogue No. 59.

N. Y. INSTITUTE of PHOTOGRAPHY

NEW YORK	CHICAGO	BROOKLYN
141 W. 36th St.	630 So. Wabash Ave.	505 State St.

CAMEO Transparent Water Colors

"all the colors of the rainbow"

The easiest and most brilliant colors on the market for lantern slides, prints, lamp shades and every use

PRICE LIST--Leaf Form

Box--Book 10 Colors, Bottle Modifier, Brushes,	$1.00
Book--15 Colors	.75
10 Colors	.50
Trial Edition	.25
Liquid Colors, Box--Set of Six Colors	.70
Liquid Colors, Box--Set of Twelve Colors	1.25
Individual Sheet Colors	.10

AT YOUR DEALER'S, OR FROM

J. T. DeSOUCHET & CO.

1742 W. MADISON ST., CHICAGO, ILL.

LEARN PHOTOGRAPHY

BETTER POSITIONS -- BETTER PAY

Many opportunities are now open to ambitious men and women. For 29 years we have successfully taught

PHOTOGRAPHY Photo-Engraving and Three-Color Work.

Our graduates earn $35 to $100 a week. We assist them to secure these positions. Now is the time to fit yourself for an advanced position at better pay. Terms easy; living inexpensive. Write for catalog TODAY.

Illinois College of Photography, Box C. A. 943 Wabash Ave., Effingham, Ill.

PRINT PERFECTION

AND HOW TO ATTAIN IT

DR. B. T. J. GLOVER

Price: Cloth, $1.25; Paper, 75c

DR. GLOVER intends this work as supplementary to his excellent pamphlet on "Negative Making." The fitness of the negative for the purpose was fully considered in this former publication and the photographer in "Print Perfection" will find what is most helpful to him in getting the best possible results in the positive picture (the print). The working methods are most worthy of consideration. The quality and behavior of various printing methods as regards exposure, development and finish is exhaustively entered into and the practical worker as well as the novice will find the book of significant value.

LIBERAL DISCOUNT TO DEALERS

FRANK V. CHAMBERS

Importer and Trade Agent

636 South Franklin Square, Philadelphia, Pa.

A New Book

"Visual Illusions"

By M. Luckiesh

(Author of "Light and Shade")

Contains 252 pages; 100 illustrations
Durably bound in dark blue cloth
Price, $3.00, postpaid

A BOOK of pertinent interest to the photographer. A valuable aid to control factors in work, which antagonize true rendition of things before the camera. A guide for practical application of psychological peculiarity of personal observation to expression of reality—along the lines of art. It will be of particular value to the portraitist in showing the need to pay attention to the deception occasioned by natural vision in the production of pictorial effect so as to counteract their influence.

ORDER YOUR COPY TODAY FROM

FRANK V. CHAMBERS, 636 South Franklin Square, Philadelphia

ILFORD

SPECIALIZED PLATES

Give Results Beyond Comparison for Difficult Work

ILFORD ZENITH—A super-sensitive plate (speed H. & D. 650) is invaluable for portraiture, producing beautiful gradations; adapted to poorly-lighted studios, short exposures of children and artificial light.

ILFORD ISO-ZENITH—A high-speed, color-sensitive plate (speed H. & D. 700.) Their color-sensitiveness is added to all the desirable qualities of the Zenith, enabling their use by artificial light, including flashlight.

ILFORD SCREENED CHROMATIC are color-sensitive (except to red), and especially to green and yellow. They give true color values, yet *dispense entirely with screens or light filters.* Ideal for architectural and landscape work. (Speed H. & D. 270.)

ILFORD ALPHA (SEPIA) POSITIVES—For lantern slides, stereoscopic positives and transparencies, these plates produce a wealth of rich and beautiful values by *direct development,* ranging in tone from red through brown to sepia. Extremely simple to use.

These are only a few of the 17 different Ilford plates for every photographic need. Send for descriptive booklet. Stocked in all Standard Sizes.

R. J. FITZSIMONS CORP.

Dept. A 75 Fifth Avenue, New York

LUMIÈRE AUTOCHROMES

OPEN A DELIGHTFUL NEW FIELD FOR THE AMATEUR

SPRING is a season of fleeting miracles of color—wonders of nature that are unmatched in beauty.

The amateur photographer can capture each delicate shade with Lumière Autochrome plates. Their use is extremely simple, and requires no special equipment other than the proper color screen.

Send us the diameter of your lens and plate size of your camera and we will quote exact cost of color screen to fit. Priced from $1.00 up. Booklet explaining entire simple process sent free of charge.

STOCKED IN ALL STANDARD SIZES

R. J. FITZSIMONS CORP.

Dept. C 75 Fifth Avenue, New York

TAYLOR-HOBSON COOKE LENSES

Are Available

If not available at your dealer's, write direct to

SWEET, WALLACH & COMPANY

(Eastman Kodak Company)

Sole Distributors for the United States

133 N. Wabash Avenue - CHICAGO

BARGAINS

Auto Graflex, 4 x 5, 6½-inch B. & L. Tessar *f*4.5 lens, one double plate-holder, good condition, net . . $64.50

3¼ x 4¼ R. B. Graflex Ser. B, Kodak Anastigmat *f*4.5 lens, one double holder, new condition, net . 67.50

No. 1 Special Kodak, 2¼ x 3¼, Kodak Anastigmat *f*6.3, Kodamatic shutter, new condition 27.50

6½ x 9 cm, (2¼ x 3¼) Ica Minimum Palmos filmpack and plate, Carl Zeiss Tessar *f*4.5 lens, three metal holders and filmpack adapter, good condition . . 59.50

3A Special Kodak, 3¼ x 5½, Cooke *f*6.3 lens, Compur shutter, good condition 29.50

Goerz V. P. plate Tenax *f*4.8, Celor lens, three metal holders, good condition 22.50

Ica Halloh, 3¼ x 4¼ roll film, Carl Zeiss Tessar *f*4.5 lens, Compur shutter, new condition 67.50

3¼ x 4¼ Speed Graphic, Ross XPress *f*4.5 lens, double plate-holder, new condition 57.50

3¼ x 4¼ Goerz roll film Tenax, Dogmar *f*4.5 lens, Compur shutter, with roll film back, also plate back, hooded ground-glass focusing panel, three metal holders, like new 47.50

Ica Reflex, 9 x 12 cm., (3¼ x 4¼) with 6-inch Carl Zeiss *f*4.5 lens, new condition, three metal holders 67.50

Ica Trix, 10 x 15 cm., double extension bellows, 6½-inch Carl Zeiss Amatar *f*6.8 lens, Compur shutter, filmpack adapter, three metal holders, good condition 36.50

9 x 12 cm., (3¼ x 4¼) Voigtlander Bergheil filmpack and plate, Heliar *f*4.5 lens in Compur shutter, three metal holders and filmpack adapter, new condition 52.50

MAIL ORDERS PROMPTLY FILLED

10 days' trial, with "Money Back" guarantee if you are not satisfied. Send check, postal or express money order, or, we will ship C. O. D. on request.

ABE COHEN'S EXCHANGE

113 PARK ROW, NEW YORK

Learn Photography at HOME

Send us your name and address and we will mail you, without obligation or expense, a complete outline of our new successful method of correspondence training in Modern Professional Photography. A most unique and efficient system of practical photographic training that saves the high cost of residence school instruction. Highly endorsed by enthusiastic students and photographers.

EARN WHILE YOU LEARN

Yon can easily make $50 to $75 every week while getting your training. Many are doing it. If you like to take pictures you can succeed. No experience necessary. Tuition very low. Easy terms. High-grade camera furnished free.

WRITE TODAY

You owe it to yourself to find out all about this opportunity. So write today. We will gladly send you detailed information, also full particulars of an unheard-of offer now open to readers of this magazine.

INTERNATIONAL STUDIOS, Inc.
Dept. 4875, 3601 Michigan Ave., CHICAGO, U. S. A.

Verascope Richard

45x107 mm. 6x13 cm. 7x13 cm.

The Fable of a photographer who Woke Up
(With apologies to George Ade)

There was once an Amateur Photographer who owned a High Grade camera which he used Sometimes. He always carried an Envelope of Paper Prints, showing them to his Friends and calling their attention to the Wonderful Detail. One evening the Amateur and his Wife called upon a Friendly Neighbor who owned a Verascope. The evening was Spent in looking at Positives in a Stereoscope and when they went Home the Amateur still had the Envelope in his Pocket. In the morning a Passer By found a High Grade camera in the street, smashed to Smithereens. Moral: Look at the work of the Verascope *before* buying a camera.

A New Richard Camera
The FILM PACK GLYPHOSCOPE 45x107 mm.

An inexpensive stereoscopic camera fitted with a matched pair of fine double achromatic lenses. It is fitted for the use of film packs only and has a fitting whereby the camera may be used as a stereoscope. The price is $20.00. Sole leather case $4.50.

Ask your dealer about these cameras

O. H. SAMPSON
510 North Dearborn Street, CHICAGO
Sole Agent for United States and Colonies

Cinema Handbook

By AUSTIN C. LESCARBOURA
Managing Editor *Scientific American*

Flexible Cover ***507 pages, gilt edged***
Profusely illustrated

This well-represented book of compact dimensions gives to the non-professional understanding and insight into the methods employed to produce the wonderful results seen accomplished upon the screen.

Emphatically, this little pocket edition contains more than is to be had from the reading of many books on the subject. *It is a handbook in the real sense of the word.*

Price $3.00, postpaid

FRANK V. CHAMBERS
636 Franklin Square Philadelphia

Practical Amateur Photography

WILLIAM S. DAVIS

WE have no hesitation in stating that this is one of the very best books for the advanced amateur as yet published. The student is told, not only *how* a thing should be done, but also *why* it should be done. The chapters on composition and the artistic treatment of special subjects is very valuable, inasmuch as they are record of the personal experience of its author who, in addition to being an enthusiastic photographer, is, at the same time, an accomplished painter in oils. The glossary and bibliography, together with a complete index, makes the book a convenient source of reference. *Price, cloth, $2.00.*

Order from

FRANK V. CHAMBERS
636 South Franklin Square, Philadelphia

SPECIAL SALE

No. 0 Graphic Cameras

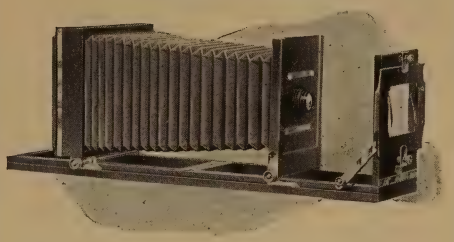
Recently discontinued by factory. Ideal for hunter and sportsman. A ready set camera with *f*6.3 Kodak Anastigmat Lens and Focal Plane Shutter. Speeds 1-10th to 1-500th of a second. Direct Vision Finder. Takes pictures 1⅝ x 2½ (V. P.) Clear and sharp from which brilliant enlargements up to 8 x 10 can be made.

Now $24.00 formerly $48.00

Leather Covered Case with Shoulder Strap, $4

CHARLES G. WILLOUGHBY INC
CAMERA HEADQUARTERS
110 West 32d Street. New York 118 West 44th Street. New York

Graflex Enlarging CAMERA



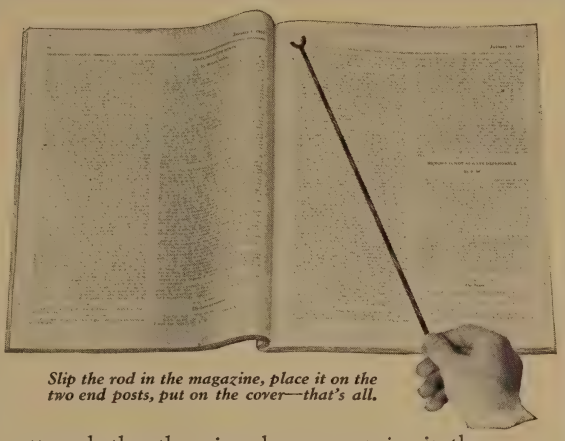
Fitted with *f*6.3 Kodak Anastigmat Lens for Negatives 4x6 inches or smaller. Enlarges any size up to 8x10 inches. Price, including Lens and Bromide Holder,

$27.50 formerly $55.00

CHARLES G. WILLOUGHBY INC
CAMERA HEADQUARTERS
110 West 32d Street. New York 118 West 44th Street. New York

BIND your copies of THE CAMERA in the only perfect way

THE only Magazine Binder that will quickly and securely bind each issue as published and bind one magazine or a complete file without in the slightest manner mutilating same. No strings, clamps, springs or locks used. Retains at all times the appearance of a neat and substantially bound book, no matter whether there is only one magazine in the Binder or a complete file. Nothing complicated, nothing to get out of order.



Slip the rod in the magazine, place it on the two end posts, put on the cover—that's all.

Over 2.000 sold and never a complaint.

¶ The Binders hold one volume (12 copies) of THE CAMERA and resemble the loose leaf ledger binders, only each copy is held in place with a flat steel rod (see illustration) fitting on pins.

¶ We've used these Binders in our own office for the past nine (9) years and say that they have proven indispensable.

Price $1.75, Postpaid

or send us $3.25 and we'll include a year's subscription to The Camera

FRANK V. CHAMBERS, 636 South Franklin Square, Philadelphia

DIAMOND
HIGH QUALITY

To Protect Your Camera

You Need a Case

A DIAMOND CASE

is sure to satisfy you whether quality or price is your main consideration.

At all photographic dealers or direct from us.

LOUIS LEFKOWITZ & BRO., Inc.
1-17 Greene Street, New York

HIGGINS'

Photo Mounter Paste

—the same unvarying quality which thirty years ago set the standard for the world.

—will not warp or cockle the mount, strike through, or discolor.

—more solid adhesive matter and less water than any other pastes.

—smooth spreading.

For commercial photographers, using adhesives in large quantities, we manufacture Higgins' Vegetable Glue.

CHAS. M. HIGGINS & CO.
271 Ninth Street Brooklyn, N. Y.
CHICAGO LONDON

BURNET'S ESSAYS ON ART

By JOHN BURNET, F.R.S.

The standard work for beginners and advanced workers the world over. Adapted by every prominent art school and teacher.

Three subjects treated in one volume:

The Education of the Eye
Practical Hints on Composition
Light and Shade

Bound in Art Canvas *135 Illustrations*

PRICE, $2.00
Postage, 15 cents extra

FRANK V. CHAMBERS
636 South Franklin Square, Philadelphia

The Portrait Studio

FOURTH EDITION

A small book (5x7¼ inches) crammed full of information on everything the portrait photographer of experience wants to know relative to the construction of studio arrangement of light, and various contrivances for manipulation in getting effective portraiture. The essential only is considered; but all that is needed is here.

Send for your copy today
Only 75 Cents, Postpaid

FRANK V. CHAMBERS
636 South Franklin Square, Philadelphia

WHATEVER YOU NEED IN

PHOTOGRAPHY

WE HAVE IT

Kodaks, Cameras, Lenses

NEW OR USED

MODELS and STYLES to suit the individual and purpose, at the lowest prices. Secure a copy of our latest free

BARGAIN CATALOGUE

and convince yourself of the extraordinary values we offer. If you have a perplexing problem to decide relative to this line, our force of experienced men will gladly render assistance.

First-class merchandise—moderate prices —prompt service—is guaranteed.

CENTRAL CAMERA COMPANY

112 S. Wabash Ave., *Dept. C-40,* CHICAGO, ILL.

Soft Definition, Delicate Detail, Individuality, and Character

EXPRESSED IN ARTISTIC PORTRAITURE!

You can obtain these unusual rich qualities so necessary to please and attain perfect satisfaction from your patrons by using the

Convertible Hyperion Diffusion Portrait Lens *f*4

The undesirable lines, wrinkles, facial blemishes, are satisfactorily subdued, but the essentials of individuality and character are beautifully retained so that retouching is almost unnecessary.

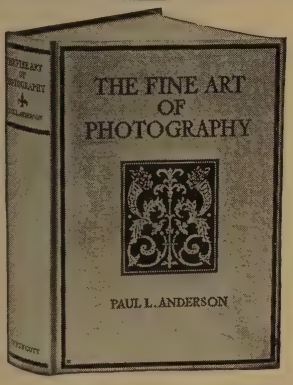
Write for your circular

GUNDLACH-MANHATTAN OPTICAL COMPANY

804 Clinton Avenue, South ROCHESTER, N. Y.

PAUL L. ANDERSON'S NEW BOOK

The Fine Art of Photography



24 illustrations; 312 pages; Cloth.

Price, $3.00—postage, 15 cents

One of the best books on Photography ever published and right up to the minute.

FRANK V. CHAMBERS, 636 Franklin Square, Philadelphia

Perfect Negatives

AND HOW TO MAKE THEM

By DR. B. T. J. GLOVER

One of the most popular booklets on the subject ever published in England. Eight printings have been made of it within six months.

The author, in this booklet, has written in a simplified manner and its very conciseness makes it invaluable to every photographer.

Bound in paper covers, 72 pages, 60c per copy, postpaid

FRANK V. CHAMBERS

Importer and Trade Agent

636 S. Franklin Square, Philadelphia

Liberal Discount to Dealers

Wollensak World

PUBLISHED BY THE
WOLLENSAK OPTICAL COMPANY
ROCHESTER, NEW YORK

DEVOTED TO
LENS AND SHUTTER
INFORMATION

VOL. IV | MAY, 1924 | No. 5

Buy your Wollensak Lens NOW—

The Series II Velostigmat helps eliminate the disappointments of speed photography. It is a high-speed, perfectly-corrected anastigmat, ideal for Graflex, home portraiture or all-round professional use. It greatly increases the usefulness of any camera to which it is fitted. This is a Series II speed picture by H. H. Coburn.

We can't make them all—

We realize that we cannot make ALL the lenses that are sold, so we have tried to make the BEST. We believe we have achieved our purpose, but it is our policy to "let the user judge."

If you want a practical demonstration of Wollensak performance, order a lens on trial.

and enjoy its use all summer

May flowers, May walks, May poles, May Day—are they not all suggestive of picture taking? Indeed they are, for May is a time when we all like to be out-of-doors with a camera.

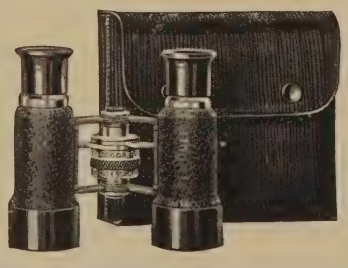
You will probably make many photos this summer. Why not make better pictures than ever? You can do so with a Wollensak lens. Why not buy now the lens you have always wanted, and enjoy its use all summer?

There is a Wollensak lens for every purpose, for sharp pictures or soft, for hand, plate or studio camera, for professional or amateur. The speedy Velostigmat *f*6.3 is generally the choice of the hand camera owner. Users of plate or Graflex cameras prefer the Velostigmat *f*4.5,

This is a reproduction of a Verito picture by D. C. Ridge. The original print shows a most delightful atmospheric quality of softness. The Verito contributes a pictorial element even to ordinary subjects, giving as much or as little softness as the user desires, by simply changing the diaphragm opening. It is convertible, rectilinear, speedy, versatile and controllable.

the speedy anastigmat, or the Verito *f*4, the versatile soft-focus lens for pictorial use.

Tell us your problem. We will gladly send our catalog and suggest a solution.



"In the spring a young man's fancy"

frequently turns to thoughts of the Great Outdoors. Nature, in all her glory, calls to her many lovers. And every photo fan answers her call. Biascope, the Wollensak pocket binocular, enhances the pleasure of all outdoor activities. Six-power. Light-weight. Genuine leather case. Biascope "B," adjustable pupillary distance, (illustrated), $7.00. Biascope "A," fixed pupillary distance, $5.00. At your dealer's.

By mail, add 25c tax and postage.

WOLLENSAK OPTICAL COMPANY, Rochester, N. Y.

THE CAMERA

THE PHOTOGRAPHIC JOURNAL *of* AMERICA

FRANK V. CHAMBERS, Editor, 636 South Franklin Square, Philadelphia

Volume XXVIII MAY 1924 Number Five

THE STANDARDIZING OF BROMOIL—

MILES J. BREUER, M.A., M.D., F.A.C.P.

WHEN I first looked into the bromoil process, and attempted to work with it, it impressed me very much like my mother's famous mince-meat of long ago. That the results were wonderful, everyone admitted, nay, even insisted. But the "experience" required to produce them was also something fearfully wonderful. No one knew just how to acquire it. The beginnings of the ability of the few people that had it, were shrouded in antiquity and uncertainty; just how one emerged from the early stages of unskilled helplessness into the bloom of the finished artisan, was a little uncertain, but certainly it involved endless trial and failure, and endless expenditure and waste.

The earlier directions for the bromoil process, as found in the literature, also partake of the sweet inaccuracy of the mince-meat prescription. It was a pinch of this and a dab of that; a part of the process had to be done a certain way that could not be described; the one who knew, could only show by actual demonstration; and the humble acolyte could only pray for the heaven-born inspiration that seemed to be an essential part of the process.

How different is a scientifically standardized process! Consider, for instance, the development of a plate by the thermo method. With a pair of scales, a graduate, a thermometer, and a clock, and ordinary experience in laboratory manipulation, a person who had never seen a plate or a developer in his life, could get results the very first time he tried it, exactly as good as those of an experienced hand. A standardized process is one in which non-essential matters are omitted from the directions for its performance, and in which every condition which has any effect on the result is expressed in definite units of measurement.

In this manner, I have tried to standardize the bromoil method. If my success had been an ideal one, I should have eliminated, from the directions for the work, every item that has no effect on the ultimate result; and in the resulting formula, not one gram nor degree, nor minute could be altered, without affecting the result. I think it will be a long time before bromoil is on that basis, on the basis that development now rests. But, at the present day there are still many empirical factors, little understood, and not expressible in physical units. When these are all standardized, it will be possible to reproduce results from a technical standpoint; but from an artistic standpoint, of course, standardization will never be possible. If you standardize a thing, it thereby ceases to be an art.

My efforts have enabled me to secure results in a process at which my first attempts were consistent failures, technically. These efforts have consisted in taking one by one all the factors that enter into the production of the bromoil result, and eliminating from them all the factors of variability that cannot be accurately measured and expressed in such a way that they can be reproduced from a reading of the instructions.

PAPER

The only control that the average amateur has over the paper he uses is that of selection. For him, the study of the chemical factors that enter into the final result may be academically interesting, but is not essential. What he wants is to know what paper has been known to produce good results in the hands of successful workers, and to confine himself to the use of this paper. He must trust the manufacturer to put out a standardized product, which, with the same manipulation, will produce like results. This the manufacturers are doing, as far as is today possible. I shall not list individual papers, as these can be found in the various treatises on bromoil work.

EXPOSURE

All works written on the bromoil process agree that the exposure must be correct. All right. What is correct exposure? Opinions and definitions vary, depending to a large extent on the purpose for which the developing is done. For bromoil work, we need an exposure that will give us the desired appearance in the picture, and which will enable us to allow the paper and developer to come to a chemical equilibrium. In other words, an exposure so long that you have to snatch the paper out of the developer, in order to keep the picture from getting too dark, will not give good bromoil results. One that is so scant as to require much time and mental effort to get anything on the paper, is also no good.

The minimum exposure that will develop out to the desired appearance, and remain unchanged in the developer a total of double the length of time that was required to develop that desired appearance, gives prints that make technically good bromoils; and is an exposure that can be reproduced by care and measurement.

I never expose my large sheet until I have arrived at this exposure on trial strips. When I succeed in getting a strip that develops to the desired appear-

"BOSTON ART MUSEUM" JOHN H. GARO

From the One Man Show at The Camera Club, New York

"THE POPLARS" JOHN H. GARO

From the One Man Show at The Camera Club, New York

ance (viewed by strong light), and which will remain unchanged in the developer again as long as was required to produce this appearance in the first place, I try a strip with fifty per cent less exposure. If this is satisfactory, I use it on the large sheet. If it is insufficient, a trial strip on an intermediate exposure is tried, and adopted if satisfactory, otherwise the original exposure is used.

This requires the watching of a clock during development, and the jotting down of the exposures for the different strips. I think the jotting is rather important. Memory is a treacherous servant.

DEVELOPMENT

All writings giving directions for bromoil work agree that amidol is the best developer. Some go so far as to say that it is the only one with which dependable results are possible, and I am inclined to agree with this view. Amidol produces its reducing action without the aid of an alkali, and it is the presence of free alkali in other developers that makes them unsuitable for bromoil prints.

Try it once. Take a fairly strong solution of sodium carbonate, say one part to four of water, and put a sheet of printing paper or a plate in it for a few moments. When you take it out, your finger can detect the change in the gelatine—it is soft, slimy and comes off easily. Alkali in the strength and at the temperature that is used for development, will not produce this change to

"SUNSET" JOHN H. GARO

From the One Man Show at The Camera Club, New York

such a great extent that it can be felt with the fingers, but the change is there, and it is precisely the change that interferes with the proper pigmenting of a bromoil print.

Just what degree of alkalinity suffices to interfere with pigmenting, I am unable to state. To ascertain that fact would require a more accurate and ambitious piece of research than I have been able to undertake. But I have found that the change from our alkaline city water to distilled or acidified water in washing prints, made a tremendous difference in the constancy of my bromoil results.

FIXATION

The factors requiring standardization are the composition of the solution, the concentration of the hypo, the acidity or alkalinity of the solution and the time of fixation.

Hardening agents must not be used. They have precisely the same action on the film as the bleaching agents which are used to produce the differential tanning of the gelatine that enables it to take pigment properly, and this tanning must not be permitted to take place until the film is ready for it, that is, until the unreduced silver has been dissolved and the hypo washed out.

Hypo, or sodium thiosulphate, in dilute solution, is alkaline, and the commercial hypo may be alkaline enough to spoil the gelatine film for pigmenting. Therefore, an acid hypo is preferable. There are many formulas for acid hypo solutions that are excellent. The following one, whose acidity is kept up, not by free acid, but by the so-called buffer salts, appeals to me especially:

Hypo	166	grams
Sodium sulphite (dry)	33.3	grams
Citric acid	6.6	grams
Sodium citrate	8.8	grams
Water	1000	cubic centimeters

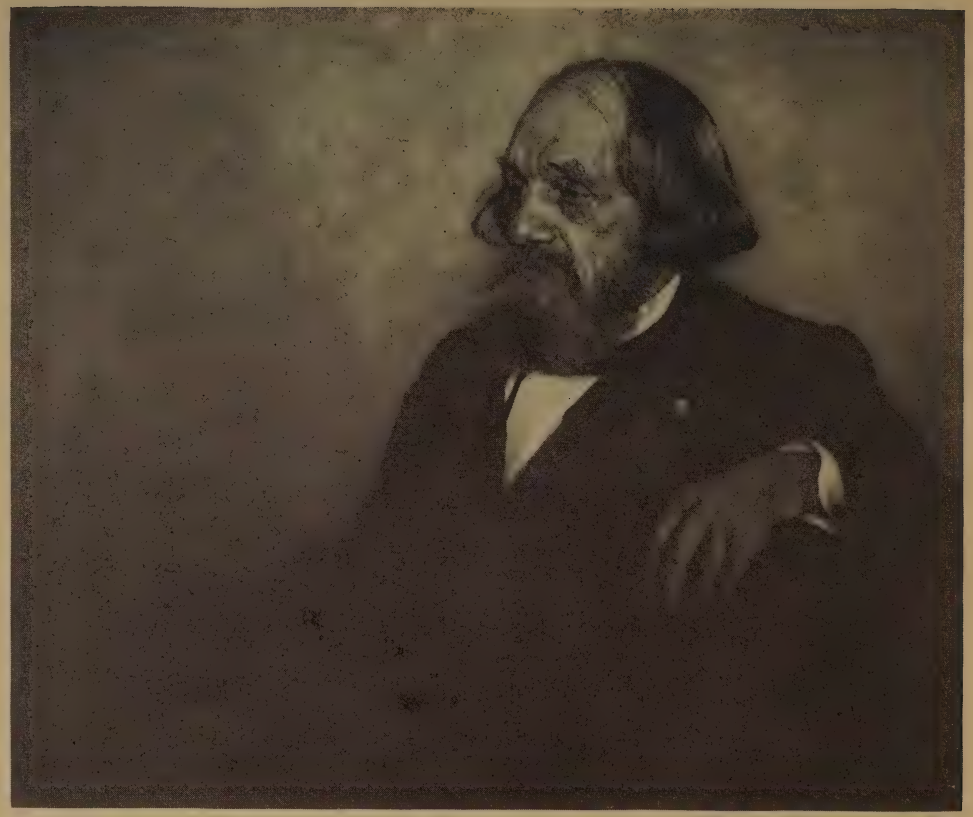
In regard to the concentration, I have found that the usual proportion of twenty-five per cent hypo worked very well, providing the matter of acidity was taken care of. I have also felt it advisable to limit the time of the prints in the bath to fifteen minutes, instead of putting them in one on top of another until the whole batch was finished, and then leaving for fifteen minutes after the last one was put in. I am not able to state definitely whether or not a longer time is harmful, but as the influence of the time in the hypo bath is an unknown one, I felt it best to make it uniform.

WASHING

The variables in this case are the time in the water, the exposure of all parts of the print uniformly to the action of the water and the reaction of the water.

There are probably many parts of the country where the water is sufficiently alkaline to be detrimental to best results. In such cases, it is not advisable to wash in running water, but in a number of baths of water, acidulated with acetic acid or potassium metabisulphite.

No great accuracy is required in the matter of the length of time that the



REV. EDWARD EVERETT HALE

JOHN H. GARO

From the One Man Show at The Camera Club, New York

"THE OLD BRIDGE" JOHN H. GARO

From the One Man Show at The Camera Club, New York

prints are left in the water. Approximately an hour is sufficient to wash out the hypo and longer is not necessary. I do not think it advisable to allow prints to remain washing over night, or while you go out visiting. The influence of prolonged soaking on the pigment absorbing power of gelatine is an unknown variable which we want to avoid. In cases where prints are not washed in running water, eight changes, allowing the print to drain during each change, are sufficient.

It is very important to see that the print is evenly exposed to the action of the water during the entire time of washing. Uneven washing and uneven soaking is the explanation of many mysterious spots in the final result.

DRYING

I do not see that it makes much difference whether or not a print is dried at this stage, providing that the drying is uniform. On several occasions I have taken duplicate prints through the process, all operations being identical, except for the drying at this stage, and could detect no difference.

I am in favor of drying at this stage, for a definite reason. It permits the process to be interrupted at this juncture, and you can get it off your mind, and settle some of the business problems that have been intruding into your recreation, or perhaps take the madame to the show. That disposed of, you can come back to the bromoil in a leisurely frame of mind, which is indispensable to success. If the process takes too long, the man who is doing it for a recreation will become tired or impatient, and will be inclined to hurry the later stages and *hurry is fatal to success.* In our modern busy life, the time required to run an entire bromoil through from enlarging lantern to pigmenting, is too great to be subtracted out of any one day or evening.

BLEACHING

The theoretical variables in this case are exactly the same as in the case of fixation. The composition of the solution is the thing that has given me the greatest trouble. It is not that the particular formula matters. My personal opinion is that it makes very little difference which bleaching formula is used. I have finally selected the one that I considered the simplest and easiest to make up. It is the chemicals and the water that caused my trouble, and I found that I could not depend on my results until I began using distilled water and chemically pure chemicals.

There are three possibilities of trouble in this respect. The pigment-absorbing properties of the gelatine may be unfavorably affected either by impurities in the water, impurities in the chemicals (iron is considered to be especially harmful by some writers on the subject), and the interaction of impurities in the water and in the chemicals, themselves previously harmless, may produce new substances or effects, which are detrimental. For instance, a very hard water will cause a considerable precipitate with copper sulphate—this removes active copper from the solution. The rate of bleaching depends on the concentration of copper and on the rate of bleaching depends the pigment-absorbing power of the finally prepared paper.

Or, another example: some of the bleaching formulas have what appears

to be a very delicately balanced reaction, depending on the accurate addition of a single drop of hydrochloric acid. A very hard or a very alkaline water will play thunder with the reaction of such a solution, and also with the final results that depend on that reaction.

The length of time that a print must remain in this solution is that required to bleach the entire silver image, so that no metallic silver is visible. A faint brown image of silver sub-bromide, formed during development, will often be seen—this will not bleach out in the bleaching bath. A good bleaching bath is made weak enough so that bleaching requires a sufficient length of time to tan the film properly for pigment absorption by the time the metallic silver has all disappeared; a longer time than that is not required. A longer time by introducing the unknown factor of the prolonged tanning action on the entire film, even the parts protected by the silver image, has a tendency to interfere with the best results. Between five and thirty minutes are the periods required by bleaching baths in common use.

AFTER-BLEACHING PROCESSES

The silver image must be completely removed from the paper, otherwise it will darken again by the action of light, and add unknown and unexpected values to the pigment. Thorough bleaching is possible only in an acid solution,

"MORNING ON THE RIVER" JOHN H. GARO

From the One Man Show at The Camera Club, New York

and of course this thorough bleaching must take place before the final fixing. That, to my mind, is the answer to the controversy as to whether or not the acid bath is necessary following the bleaching, and whether it should come before or after the fixing. The acid bath is necessary in order to be sure that bleaching has been thorough; in fact, in some cases it is visible to the eye that the silver image is not all gone until after the acid bath. One per cent sulphuric or hydrochloric acid is the common bath and five minutes suffices.

There should be a short washing between the acid bath and the final fixing, but I do not see the need of the same thorough washing that is insisted on by some workers. The acid solution used is a weak one in the first place, and I cannot see the harm if there is an infinitesimal quantity of sulphur precipitated in the hypo. It cannot hurt the pigment nor the film.

The bath for the second fixing is given in most writings as a much weaker one than the bath for the first fixing. One part of hypo to twenty of water is all that is really required, but I can see no objection to using a bath of exactly the same composition as is used for the first fixing, including the acidification. The same solution as is used for the first fixing should not be used, however, at least not until it has been experimentally shown that the old bath, containing

"DECORATIVE DESIGN" JOHN H. GARO

From the One Man Show at The Camera Club, New York

dissolved silver, has no deleterious effect on the final result. In the meanwhile, it is a very simple matter to use fresh hypo.

The final washing should be reasonably thorough. But again, I do not see the harm of slight traces of hypo left in the film; they can have no effect on the pigment image, such as they have on a silver one.

DRYING

The same thing can be said about drying at this stage as I spoke of before. I prefer to divide my work on bromoils into three stages, separated by intervals of drying, simply because it gives me the opportunity to go through the steps more leisurely, and therefore more carefully and accurately.

In order to avoid uneven drying on account of drops or pools of water keeping certain portions of the film wet longer than others, the print should be blotted, and hung to dry by pinning to a board by four corners.

SOAKING

The variables here are the time, the temperature, the reaction of the water, and the exposure of the entire paper to the action of the water.

If the water supply is strongly alkaline, the soaking bath should be acidified until it is just over the line to litmus, and weak acid, such as acetic, is preferable to a strong mineral acid.

The temperature of the water exercises a tremendous influence in varying the final result. As my purpose in this paper is merely to emphasize the necessity of standardization, and not to go into the technic of control, I shall leave the discussion of the proper temperature to others. There are many admirable discussions of it in the literature. The thing I wish to urge here, that in order to secure consistent results, it is necessary that the thermometer be a companion of the print in the soaking bath. The control of the temperature of a tray of water is no easy thing, unless you have an elaborate laboratory. I have gotten the best results by setting my tray on a pile of folded newspapers, covering with a board or another tray, and covering the whole with newspapers or blankets. In this way the temperature can be kept constant for an hour.

I have gotten my best results with about an hour's soaking, and have not studied the influence of varying the time. Not knowing whether or not it is harmful to let the print soak overnight, I limit the time to one hour.

It is highly important that the print be uniformly submerged in the water. Many papers float on top of the water, causing an uneven wetting. These I weight down by little lead blocks on the four corners. If you put the print in the water upside down, be careful that there are no bubbles under it, as that is sure to result in spots on the pigmented print.

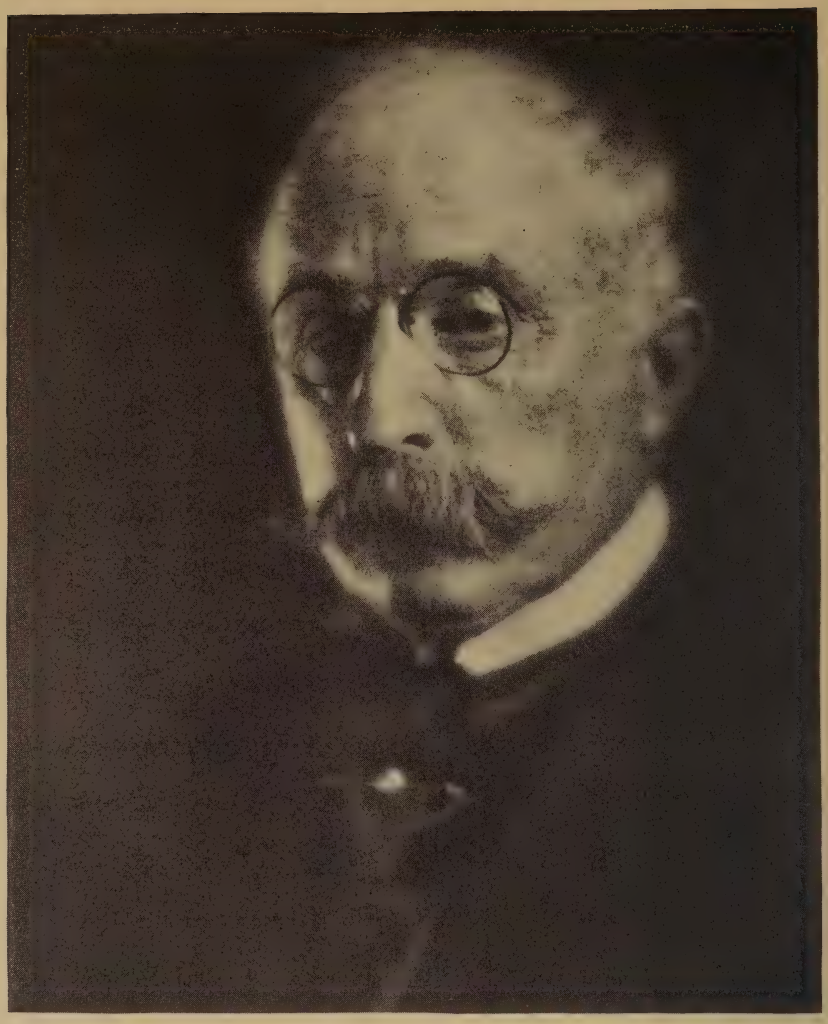
PIGMENTING

The variable factors are the kind of ink, the consistency of the ink, and the state of moisture of the print during the inking process.

There are good inks on the market, and using one of these will dispose of the standardization of this factor. The consistency of the ink is a rather puzzling thing and the most difficult factor about the entire process to standardize. My original effort was to mix up a large quantity of ink of such

PORTRAIT—MISS B. JOHN H. GARO

From the One Man Show at The Camera Club, New York



"PHILLIP LITTLE (ARTIST) JOHN H. GARO

From the One Man Show at The Camera Club, New York

consistency as I found to be successful with a few experimental efforts, and preserve this in an air-tight container for subsequent prints. This works in general, but not invariably. With all efforts to secure a standard, uniform process, there will still come prints which require a slightly different consistency of ink.

Therefore I adopted the following procedure, and stick to it uniformly. On a given print, I start with the stiffest ink I have, and try it on the dark parts of the picture, and keep on thinning the ink until I find a consistency that will take moderately well. It is necessary to start with a stiff ink and work toward a thin one, the reverse will, of course, not work; a thin ink will smear up the picture and require removal. Various diluents are recommended in the literature. I prefer turpentine to the more volatile diluents, because it does not evaporate with sufficient rapidity to alter the consistency of the ink while you are working, as benzine or gasoline do. It is also essential to uniform results that the thinning of the ink be done on the palette, with a sufficient quantity to pigment the whole print.

The proper condition of moisture in the print during the inking is also a difficult thing. Pads of wet paper, blotter, or cloth under the print, are not always sufficient. In a house heated by the hot-air furnace system, the air is usually very dry, and during the winter, I invariably find my print drying more rapidly on the surface than it can be supplied with moisture from the wet pads below. This problem can be solved by heating an open vessel of water in the room for some time previous to inking, and filling the air with steam. I do this invariably, for the humidity of the air is a variable thing, winter or summer, and many difficulties in pigmenting are explainable on the ground of a rapid drying of the surface of the film, even though the pads underneath are wet.

FIDO, PUSSY—MEAOUW AND CO.—

C. H. CLAUDY

WITH apologies to Tennyson, I quote: "In the spring the kodak snappers lightly turn to thoughts of pets." At least, they write me letters and inquire how best to take pictures of the dog, the cat, the canary, the sheep, the ram, the cow, the horse and the parrot, the monkey and the bull frog! (Truly, this is a fact!) Hence I set down some stray bits of experience which have come my way in a somewhat lengthy photographic career. Not that I ever could consider myself an expert photographer of wild or tame animal or bird life, but no man can press the button thousands of times and not occasionally get some sort of a portrait of an animal, more or less worth preservation.

I begin with cats, probably because I like the furry beasts which "walk by themselves" and enjoy the difficulties of picturing them.

Cats are hard subjects, because they always do what they want to do, never what you want them to do, unless you bribe them. The only bribe a cat under-

stands is something to eat, or the prospect of catching something. To endearing words and requests, commands, implorings, she is deaf and dumb . . . exceedingly dumb. To a saucer of cream, a bit of meat, a ball on a string, she (or he) is usually responsive. Hence, if you want your cat doing anything at any particular place, do what the Tea Pot Domeites did . . . bribe.

Do not picture a black cat against a white fence or a white cat against a green bush. The effect is too startling. As you can't change your cat's fur and can change her position, choose your background first and bribe your cat to sit, stand or play in front of it.

Whatever else you do, don't chide the cat. Don't speak crossly, don't push or pull, and above all don't cuff her. A dog forgives; a cat doesn't. A dog understands. A cat doesn't. She is clever as sin doing what she wants and stupid doing what you want; she was built that way, so if you must punish, go punish Mother Nature and let kitty go free. If you haven't patience without end, don't try to make a cat's portrait anyhow. But a good cat picture is often well worth while, for whatever sins a cat commits from the art standpoint, the one she never has committed and never can commit is to do, be, look or act in an ungraceful manner.

Picturing Fido is another matter altogether. Fido understands, if he loves you, that you want something. Being the most selfless animal in the world, he immediately wants to do that something, too, just because you want it. The only difficulty is to convince him that what you want is for him to stand on his hind legs and smoke a pipe, while he is entirely convinced that what you want more than anything else in the world is for him to chew up your hat! Once this slight misunderstanding is cleared away, he will very gladly stand on any leg, or any combination of legs for that curious creature, his master, to point a black box at him.

Personally, I protest against making Fido smoke a pipe or wear a high hat or do other undoglike and undignified things. That is, I protest if Fido is a dignified dog. If he is a small puppy of any breed or a grown mongrel with a jovial disposition and no sense of grown-upness at all, it probably doesn't matter. But the picture of a sensible, grown-up, wise old hound, which shows him perched before a table apparently about to play poker or drink a glass of near-beer is a gratuitous and unnecessary insult from which his finer sensibilities would shrink if he knew, and from which yours should shrink because you do know! So much for Fido's dignity.

Do not forget Fido's tail. From your standpoint it is of no importance in the picture, unless it is a pointer pointing. From Fido's angle, a tail is a piece of machinery intended to express gratification on being allowed to live in the same world with you. The more he pleases you, the happier he is, and the happier he is, the more waggish the tail. Hence, foolish though it sounds, the speed of exposure will be governed largely by the rate of vibration of Fido's caudal appendage, and you can arrange stop and choose light, distance and angle with Fido's tail as a starting point!

"How shall I make a picture of Tomti, my canary? All I get is wires of the cage with a few pieces of bird showing through!"

This mournful wail comes from a person without imagination, evidently. Seems to me an old cage, the wires of which can be bent out of the way, a piece of glass over the hole to keep Tomti from flying out, a very short focus lens, and small camera and subsequent enlargement, are indicated. But why the objection to the cage? One doesn't picture a girl without her hair, Fido without his tail, or an automobile without a driver. No one ever saw Tomti without his cage; a picture of Tomti, *sans* cage, would be rather unnatural, wouldn't it?

"Any one can take a picture of a horse!" Yes, I suppose any one can. But will it be a good picture? A great many amateur attempts I have seen show Dobbin as a rather spiritless beast, harnessed to a carriage and looking slightly bored. Doubtless the carriage is a fine way of holding Dobbin quiet; something on the order of the iron head rest of sainted memory our forefathers used to experience at the portrait photographer's place of torture. But

"APPROACHING STORM" JOHN H. GARO

From the One Man Show at The Camera Club, New York

inasmuch as Dobbin spends more time in the field and the stable or behind the plough than behind the buggy, he will make a more natural and certainly a more animated picture if so "taken."

The passion for size in amateur pictures has been responsible for a great many picture-horses such as never were on land or—well, of course a horse is never on the sea. Dobbins, with large heads and a pony's hind quarters, Dobbins with the rear end of a Percheron and the front angle of a Shetland pony, result from trying to get a quartering angle view of said Dobbin with a camera held within ten or fifteen feet of the subject.

That one can make a good picture of a human being at fifteen feet is no argument. A horse is not human. He is equine. The equine race have four legs, a long body, a long head and extend quite a distance from fore to aft (I am still nautical). If the horse's head is fifteen feet from the camera and his other end twenty feet away, the front end is going to be bigger than the latter in the picture by several degrees, all evident! Hence, take side views close to, and quartering views far enough away to have the difference between perspective of the horse's two ends less than perceivable.

All that applies to Dobbin applies to Bossy, with a throw back to Fido and his tail. But a word must be said further about Bossy and her color scheme.

"TREE STUDY" JOHN H. GARO

From the One Man Show at The Camera Club, New York

"BABY MORSS" JOHN H. GARO

From the One Man Show at The Camera Club, New York

"STILL LIFE" JOHN H. GARO

From the One Man Show at The Camera Club, New York

Nature wasn't especially kind to a cow, anyway you look at her. She is seldom a thing of beauty, except her eyes, she is never quoted for her intelligence and her speed is minus. As a giver of milk or a provider of cute little calves she is in a class by herself, but from the pictorial standpoint, she is what Abe Potash once said of a third mortgage; she is nix. That is, by herself. As a decorative motive for the landscape, she is fine. But as a portrait subject, she is usually too multi-colored, all reds and browns and whites or blacks and whites and greys in patches, to fit in very well with the average background against which cows are usually located. Personally I never spent much time making interpretations of Mrs. Cow, but if I did, I would surely pay due attention to her color scheme and not make her large areas of continents and oceans on her hide contrast too strongly with surroundings.

For real intelligence, a sheep is a splendid grass eater. If you want to enjoy an afternoon doing nothing, as gauged by results, try to make one sheep—or any number of sheep—do something you want them to do. A cat is bad enough when it comes to wanting her own way. But a sheep hasn't any way of her own at all; she just naturally does the exact contrary to what you want. If you want her head on, she stands sidewise. If you want her sidewise she

"FLOOD" JOHN H. GARO

From the One Man Show at The Camera Club, New York

runs away. If you don't want "her" at all, but do want Mr. Ram, the chances are he sees in you a cherished opportunity to upset something. The only way to portrait a sheep where I had success, was to haul him into a pen, get some one to hold him still, get all set, have the holder jump away and snap before Mr. Sheep could make up his very flighty mind which way to run. The method is recommended. So is the course of action herewith set forth; don't make portraits of sheep. They are not worth much anyhow. Make pictures of flocks of sheep, as decoration to the landscape and tell your friends you don't want to make pictures of Mr. and Mrs. Mutton!

My interrogators will not, I trust, consider that I have treated their sober inquiries from too light an angle; all the best photographers prefer a light angle in making pictures.

N. B. Don't send your first dozen cats, dogs, horses, cows and sheep to the editor for reproduction. He has seen lots better than they are and rejected them. Send in your one hundredth try and maybe he'll say it's not the worst in the world.

ALONG THE BEACH WITH A CAMERA —L. W. BROWNELL

TO those who are fortunate enough to live within approachable distance of some sea-beach, especially one along which there are both stretches of sand and rocky promontories, there is open to them, from early spring until late fall, a place that is almost inexhaustible in its opportunities for the Nature photographer. To make the most of one's opportunities, he must start on his searching trip when the tide is on the ebb and about half way down. This will give him the full time of the lowest ebb and plenty of opportunity for searching the rocks that are covered at high tide for his subjects. There are an infinite multitude of them to be found, many of which he can photograph at once and others which he can take home with him and photograph at his leisure.

I can hear some of my readers, who have never given the subject any thought or who have never had the pleasure of a stroll along some sea-beach when the tide was out, exclaim: "Why, there is nothing on a beach but sand, rocks and sea-weed." When they have once made a trip along some such beach as I have described, they will, if they have used the eyes with which Nature has endowed them in the way in which she intended they should, find how very grievously they were mistaken and, if they are really enthusiastic Nature lovers, or camera users, or better still, both, they will return enthusiastic over the opportunities opened to them and eager for the next excursion.

Even if it was true that one could find nothing but sand, rocks and sea-weed there would still be enough material in the last item alone to supply the most assiduous Nature photographer with enough material to last him all the

"MASTER A. AMES" JOHN H. GARO

From the One Man Show at The Camera Club, New York

"CHURCH AROUND THE CORNER" JOHN H. GARO

From the One Man Show at The Camera Club, New York

season and even then he would be very far from exhausting it. Moreover, the sea-weeds, of which there are thousands of different forms, make most interesting subjects for photography and most beautiful photographs. They can be found almost anywhere along the beach. Lying singly, or in small heaps, on the sand where the waves have washed them, washing back and forth in the waves at the water's edge, or floating quietly in the numerous pools among the rocks. They are of almost every color from nearly black to bright scarlet and an infinite variety of shapes. If one wishes to add prints of some of these forms to his collection of Nature photographs, and they would help greatly to enhance it, the process is not difficult and he will find that the work will prove to be most interesting.

It is impossible to photograph the smaller forms of sea-weed, as they are found along the beach, except in some instances where they are attached to the rocks, nor can the beauty of their form be shown in this manner. It is best to make a trip for specimens without a camera and carry home a dozen or fifteen different forms in a pail. There they must be taken from the pail one by one, with great care not to injure them and gently rinsed in clear water to remove every particle of sand. They should then be placed in a bath-tub, or other large receptacle, half filled with water and allowed to float there until they have stretched out all their tentacles and branches to their fullest and freest extent. They should then be lifted out by very gently slipping a plate of opaque glass under them and very slowly and carefully raising them on it. Only one should be done at a time, of course, and it may be necessary to carefully arrange some of the branches so that they may show to best advantage after the water has entirely drained off the glass. This can be done with a needle, and a little practice will soon make one an adept at the arranging. After

"COMMON ROCKWEED" L. W. BROWNELL

the water has dried off sufficiently not to show as glistening spots on either the sea-weed or the glass, the photograph may be made and usually it will be found best to use the camera vertically and pointing downward at the subject, as it is less liable to slip on the glass during the exposure. The photographs should be made as nearly life-size as possible in order to give the greatest amount of detail and the results should be as good, if not better, than the mounted, dried specimens themselves, especially if they are colored after the original.

One of the commonest type of sea-weed is kelp, or rockweed. There are a number of different forms of these, but the commonest is the ordinary rock-weed. This is the sea-weed that is to be found in the greatest abundance clinging to all the rocks to which they attach themselves by sucker-like disks and from which they hang like fringe as the tide recedes. They are dark, greenish brown and their branches are distended at intervals by large, oblong air vessels. They are well-known to every child who has ever been on a sea-beach on account of these bladder-like air sacs which, when pressed, explode with a noise like a pop-gun. These should be photographed as they grow and a number of different plates can be made of them to show the different formations.

Another thing with which almost every rock, piece of submerged wood, oyster and clam shells and, in fact, nearly everything that is stationary and beneath the water is covered is the barnacles. There are a great number of different forms of these, but by far the commonest, covering everything that is coverable, is the "acorn-shell" or "Sea-acorn." It is found in vast numbers, so incrusting rocks and the piles of piers, as to completely cover them often to the depth of an inch or more and so closely crowded together as to entirely destroy

"THE HORSE-SHOE CRAB" L. W. BROWNELL

"EDGE OF THE RIVER" JOHN H. GARO

From the One Man Show at The Camera Club, New York

"THE LAGOON" JOHN H. GARO

From the One Man Show at The Camera Club, New York

the individual shape. At low tide, the barnacle covered rocks are often completely exposed and may be photographed without difficulty.

On these same rocks, but usually lower down so that they seldom are long exposed to the air, are attached clumps of the edible mussel and the oyster. The former grow in great masses, frequently covering the lower rocks like great blankets for considerable distances along the shore line. I have seen one such bed of mussels completely covering the rocks at the end of a promontory to a depth of a foot or more and upon which one could walk, at low tide, for several rods without once touching rock. These are, of course, easily photographed, but should be taken in such a manner as to show their characteristic shape and the manner in which they attach themselves to the rock.

At almost any point along the sandy beach one may run upon one of those curious and interesting creatures known as the Horse-shoe or King-Crab. Their home is below low water mark, where they crawl about the bottom or burrow into the soft sand or mud. In May, June and July, however, the females crawl up the beach to above, or near, high water mark, where they lay their eggs. Usually each female is accompanied by from one to three or four males and this is the time to seek them out and make their photographs. This creature is especially interesting from the fact that it is the last surviving member of an otherwise extinct group of animals, its nearest relations being found only as fossils. Owing to this, naturalists find it very difficult to know whether to place it with the crustaceans or with the Arachnida, the scorpions and spiders, for it has characteristics of both these groups.

Then there are the true crabs, of which there are about thirty species more or less common along the Atlantic shore. Almost any pool will reveal one

"COMMON BLUE CRAB" L. W. BROWNELL

or more of them and the species are sufficiently different in form and coloring for even a novice to readily distinguish them with but a very little study. They may either be caught and carried home to be photographed in a tank, or they may be photographed where they are found. The latter method is a little more difficult, but can be accomplished with good results, if one exercises a little patience and ingenuity. When you have found the crab you wish to photograph, remove it from the pool, or wherever it may be, and place it upon the ground among small stones and near some larger rocks against which it can be posed. Now, with a little careful manoeuvring, it can be backed into some angle between two or more rocks where it cannot well escape, and here it can easily be kept until the photograph is secured, for it cannot back away and it will not come forward as long as it is threatened from the front. Of course the reflex type of camera is the best to use in a case of this sort, but much can be accomplished with the tripod type, if one does not happen to own the former.

Every pool will show us numbers of that curious little creature, and near relative of the true crabs, the hermit crab. This little fellow earns its name from the fact that it inhabits the empty shells of different members of Mollusca. It makes but little difference to one of them what kind of a shell it is in which he takes his abode, so long as it fits and, as he grows, he moves to larger quarters, that is bigger shells and there is never any dearth of these to be found along the sea-shore. So varied are the shells in which these little animals are found, that they form the subjects for many a picture and probably the best and easiest way to photograph them is in a tank, for they will, if disturbed, withdraw completely within the shell, leaving no part of them exposed.

The hermit crab belongs to the same order with the lobsters, prawns,

"BARNACLE-COVERED ROCK" L. W. BROWNELL

"WINTER LANDSCAPE" JOHN H. GARO

From the One Man Show at The Camera Club, New York

"EARLY ICE" JOHN H. GARO

From the One Man Show at The Camera Club, New York

"EDIBLE MUSSELS" L. W. BROWNELL

shrimps and crawfish, all of which may be found, in greater or less numbers, along any stretch of sea-beach and either photographed where they are found, in much the same manner as that described in the case of the crabs, or taken home and photographed in a tank. The latter is probably the more successful method with these particular creatures.

Many of the mollusks are really well worth photographing, especially among the Univalves, those that have but one, usually spiral, shell. They should

"SEA ANEMONES" L. W. BROWNELL

be done in a tank, and the creature allowed to come forth to the fullest extent that it will from the shell before the photograph is taken.

There are also the sea cucumbers, the sea anemones, the sea urchins, the star fish, the jelly fish and many other subjects too numerous to enumerate in a short article, but which are, nevertheless, well worthy to be made objects of our quest and subjects for our cameras. If one would have a worth while collection of Nature photographs, it will pay him not to ignore the call of the sea-beach, for he will find that this section of his collection of prints will be by no means the least interesting and instructive. In fact, in his walks along the sea-beach, it is not only possible, but altogether inevitable, that he will learn many a secret of old Mother Nature that he had never before even suspicioned.

WAYSIDE FINDINGS—WM. S. DAVIS

STEVENSON says, in one of his books, "the most beautiful adventures are not those we go to seek." To a maker of pictures the unexpected finding of attractive subject-matter is a "beautiful adventure," and not infrequently is such material encountered by the wayside, rather than at the objective point he started to reach. Much potentially valuable material is often overlooked, however, when a worker emulates the motor "speed fiend," who thinks only of "eating up the road" that lies between the here and now and the there and then previously decided upon as a stopping point. It is true one may set forth in defense of the principle of looking neither to the right nor to the left the chance of becoming side-tracked and never reaching a definite objective, but it seems to me there is little to fear from this, if one is prepared to weigh fairly the relative value of the material that chance brings to view—to distinguish between the wheat and the chaff as it were—while the habit of considering the possibilities of every likely subject so strengthens the powers of critical observation as to constitute a distinct asset for the pictorialist. Therefore, I say, see all you can of what's by the wayside, whether you are traveling by train, by motor, or journeying at a more leisurely pace by means of

"A SHELTERED COVE" WILLIAM S. DAVIS

those good old standbys—human legs, which will, after all's said and done, take you where trains don't go and motors would "stall."

The variety of picturesque "bits" and telling "effects" that lie along, or very near well beaten paths, is quite surprising, whether the "path" be a line of rails, a rambling country lane, a congested city street, the edge of a quiet stream or a busy commercial water-way. On one occasion it may prove to be a glimpse of towering buildings and factory chimneys massed against a striking cloud effect—material for a dramatic composition—another time a vista up some side street or alleyway, again, a vision of fields and rolling hills capped by white clouds, or nearer by, grazing cattle, field-hands at work, a colonial doorway, boats lying close to the bank of a stream that the highway crosses, and dozens of other subjects for the cameraist.

The foregoing panegyric upon wayside scenes is due to having recently looked over a considerable number of prints in my collection and noting how many among them represented subjects found literally by the wayside. A few average examples are here presented, with the idea that they may, at least, possess some value as suggestions to readers of THE CAMERA, taken in connection with the accompanying descriptive notes.

"WAYSIDE PINES" WILLIAM S. DAVIS

A fresh fall of snow usually affords opportunities for using a camera to good purpose. It was under these conditions that I started forth one morning, following the road from the studio that would enable me to ultimately reach a stretch of meadows and woodland. Before reaching the end of the street, the house shown in "Snug from Winter's Blasts" caught my eye. The morning sunshine brought out nicely the contours of the subject, including the surface quality of the snow; the old cherry trees on the left of the composition furnished some delicate tracery to soften the austerity of the angles and rectangular lines of the house, and the blue sky flecked with a few vaporous clouds caused the snow covered roof to stand up in a clean-cut manner. Although not one of the subjects I had especially started in search of, it looked promising enough to warrant stopping long enough to find the most attractive viewpoint, after which it was only a moment's work to open the camera and make the exposure before continuing my tramp, thanks to having a simple 2¼ x 3¼ pocket camera available. Of course, the same care was exercised in timing the exposure, and using a light yellow ray filter to improve the "values" of the snow and sky portions, as would have been taken had a larger instrument been used, but this is by no means a burdensome or time consuming matter when one follows a systematic method of technical treatment for each given class of subjects. In this instance I allowed 1/10 second with stop *f*11 on Speedex film, the lens being capped by an Ingento series "A" ray filter.

"Wayside Pines" was discovered on an April afternoon while out motoring with a friend over the road that leads to Indian Neck, a charming spot near Peconic, Long Island. For three miles or so the road winds through woods and past salt-water inlets that run in from Peconic Bay, presenting to the passer-by diverse landscape material on either hand. This subject, like the one

"SNUG FROM WINTER'S BLASTS" WILLIAM S. DAVIS

previously described, was made with a pocket camera and received the same timing, with the ray filter on the lens, but the diaphragm was opened up to *f*8.

"A Sheltered Cove" hardly suggests a "wayside" scene; nevertheless it is one, having been made from the vicinity of a much traveled highway that passes Stirling Creek, an inlet located at the edge of Greenport, L. I. This I made on an August afternoon while walking into the village. Just before making the exposure, some "kids" made their appearance, one of whom wanted to have his picture "tooken." Perhaps a photographer interested in genre work might have found some way to use him for a model, but I preferred to confine my efforts to the creek! On this occasion my outfit comprised a 3¼ x 4¼ folding plate camera, and the exposure, made upon a Cramer Inst. Iso. plate, was 1/30 second with the lens working at *f*11. No filter.

My last subject, "Granite Ledges," was caught under more difficult circumstances than the other three pictures, being snapped from a suburban trolley-car that was running at a good rate of speed, which naturally caused considerable vibration—a factor more troublesome to contend with than that of simple progressive movement. To neutralize, or prevent the transmission of vibration, the camera should be flexibly supported rather than allowed to touch any part of a vibrating surface; therefore, I held the instrument up in my hand instead of supporting it against any portion of the car. Lateral movement of the subject across the field of the lens was reduced by swinging the camera sufficiently to keep the distant ledge of rock centered in the finder while releasing the shutter. This resulted in a negative showing satisfactory definition in and beyond the middle-distance, but with some blur in the nearest parts. The last did not trouble me, however, since there was nothing of interest in this portion

"GRANITE LEDGES—CONNECTICUT" WILLIAM S. DAVIS

of the subject, consequently it would, in any case, have been trimmed away in making the finished print. Naturally the fastest available shutter-speed was used in making this picture owing to the movement of the viewpoint, but this happened to be but 1/60 second by actual test, about equivalent to the marked 1/100 speed of the average between-lens shutter. My reason for making this exposure from a moving car was due to the fact that I could not spare the time to stop off and wait for another car before going on. To make the description quite complete, I will confess that the clouds did not make their appearance on this occasion, they having been "printed in" my illustration from another negative.

In conclusion, I would emphasize one point in regard to picking up chance subjects that seems next in importance to recognizing good material on sight. This is to have at hand a camera that can be quickly and conveniently brought into action, for more than one promising subject has been passed by because of reluctance upon the observer's part to stop and unlimber a cumbersome outfit. If one prefers a large tripod instrument for ordinary purposes, it is well to supplement this with a pocket camera. In most cases the latter can be used without a tripod; focusing is reduced to the minimum as a time consuming operation, and, with the possible exception of a ray filter, no loose accessories are necessary, all of which makes for rapidity of operation, once the standpoint has been chosen.

"A MOUNTAIN HOME" FLOYD EUGENE VAIL

THE CAMERA

TRADE-MARK REGISTERED

THE PHOTOGRAPHIC JOURNAL OF AMERICA

PUBLISHED MONTHLY BY

FRANK V. CHAMBERS, Editor

JOHN BARTLETT, - - Associate Editor

THE CAMERA BUILDING

636 Franklin Square (cor. 7th and Race Sts.) Philadelphia

Yearly subscriptions, in advance, postage paid, United States, Canada, Mexico, Cuba, Philippines, Porto Rico, $2.00 each; single copies, 20 cents. All other countries, $2.50 per year. Items of interest upon photographic subjects will be gladly received.

CENTRAL NEWS CO., Philadelphia, Distributors for U. S.; INTERNATIONAL NEWS COMPANY, LTD., London, England, Agents for Europe; KODAK AUSTRALASIA, LTD., Sydney, Agents for Australia; RICHARD HILL & SON, Matlock House, Devonport, Auckland, Agents for New Zealand; MARUZEN CO., LTD., Tokyo, Agents for Japan.

Entered at Philadelphia Post office as second-class matter.

RENDITION OF TEXTURE

Photography, while it has many inherent shortcomings in art expression, has the one precious quality pre-eminent, but, strange to say, the one most often disregarded by the pictorial photographer, and that quality is its truthful rendition of texture. We might, however, give photography another art prerogative, its accuracy of graphic presentation, but this graphic power, or, as it may be called, good drawing, may be included in the same category with textural rendition, and so our remarks will include it, and so be applicable to both.

The shortcomings of photography, as a means to art, let us dismiss from consideration for the present with this brief enumeration: The first dereliction is in the direction of photography's inability to present true tonal values. Its translation of color values into monochrome is false, unless special precautions are undertaken to correct it by exposure, development and suitable printing means.

Great advance has of late been made by the introduction of the orthochromatic plate and the color filter, and there is sanguine expectation of ultimate triumph in this direction. Still, there are provinces in photography where the orthochromatic means is not available, as, for instance, in portraiture, where it requires great skill to get approximation to nature's tonal scale of relative intensities, to get the same effect that the portrait painter secures.

How many otherwise good photographs do we not see in which composition is excellent, but in which all the good points are neutralized by bad showing in textural presentation. Many a pictorialist seems to think that texture is inimical to art, and so fails to give the truthful significance of things, when he has in his power such a potent means for its expression. We have seen still-life photographs where the fruit, the marble, the metal and the draperies look as if all were of the same material, nothing partook of its individuality, and yet such work meets with the approval of the art critic, because he compares it with painted pictures by artists, good in composition, but abortive in power of expression of textural quality. It is only the great painters of still life who approach the delicacy which photography gives, with exercise of only a little care by the photo-artist. No artistic method can equal photography in showing that the stone is hard, that marble has polish, that satin has a sheen, and velvet a soft and delicate pile.

Let us suppose you have three bricks to photograph, one of wood, one of metal and one of kiln-baked clay. How would you go about to get a photographic representation to indicate the individual character of the three specimens? You would at once notice that the three objects are distinguished from each other essentially by difference of structural quality, while identical in form. You know to proceed so as to get tonal values of the different colors of the specimens, so as to give relativity in any particular color, but this is not sufficient to indicate, respectively, that one is metal, one gold and one clay. So, form, outline and tonality cannot help in the differentiation you want to show in the photograph, and you realize that the means to do so depends, virtually, on your ability to exhibit individual structure.

It is the pre-eminent value of photography, as we have remarked, to render texture in a way so true as to be the despair of the draughtsman to equal. It would be impossible, only to a trained artist, to present metal, clay and wood in his picture, so that the observer of it could distinguish the essentiality of each. Some of the great painters fall woefully short in this particular, and is it evidence of artistic possession for the photo-pictorialist to slur detail, to secure breadth of effect, especially when he might use the detail to better attain that desired quality? And we hope to convince you that, with tasteful management of structural detail, he has a most efficient means to do so. First of all, let me speak of a photograph we have at hand. It is a portrait of a beautiful woman, and is the work of a master, having all the

qualifications of a good photograph and a good picture. The artist has sought for "breadth" in his subject. And "breadth" he gets, but not like some of the impressionists, by slurring detail, but by judicious distribution of the detail. The picture has a nice range of graduation from highest light to deepest shadow, but there is a differentiation of intensities, not only in the high-lights, in the flesh color and light draperies, but also in the shadows there are no blank, lusterless areas, but rich luminosity in these shadows, and the contrast is not pronounced, though there is emphasis and relief. Examined closely you see graduations of detail, not only in the high-lights, but as well in the shadows, yet, notwithstanding this wealth of detail, the unessential is kept in subordination, the detail is not obtrusive, never self-assertive, and hence the "breadth" of the picture. This subordination is effected by skill in the illumination of the head, the selection of proper tonality in the background, so as to get the head just in the proper relief, so that it does not look as if bulging out from the paper, but as if surrounded by atmosphere.

The whole effect is like what one sees in a well-done painted portrait. There are hosts of good examples amongst the painters who express themselves definitely, who are accurate in finish.

Alma Tadema was not afraid of technical accuracy. Far from detracting from the value of his conception, it enhances the range of his dramatic invention. Look at his varied and complex powers of minute draughtsmanship, especially in architectural detail. He gives us the translucency and glow as well as the crystalline structure of marble. We do not presume it is marble. It makes no apology for marble by being white, and in the shape of a Grecian amphora, or the walls of a Roman bath.

Let us look, now, at these beautiful reproductions, by photography, of the paintings of Reynolds and Gainsborough. Neither of these two great portraitists slur detail. They accurately draw the frills and trimmings of the cuffs and collars of the models. Reynolds' picture, "Miss Pelham," has all the accuracy of a photograph. Jules Breton's picture, "The Communicants," loses nothing, but rather gains in effect because texture is elaborately shown. It is a large picture, and size sometimes admits of disregard of minutiæ, but the painter accurately paints clothes and shoes, hair and flesh. The rendition of the rocks and trees, the grasses, even the straw thatching on the roofs, things accessory to the topic, is most realistic.

For texture painting, in all its beauty, turn to the Dutch school of painting, Van Steen, Terburch, Dow, Hals and others. Fortuny, in all his paintings, shows how delightful, to our unprejudiced eye, is the wealth of detail when correctly placed.

Then there is another French painter, Vollon, who paints flowers and fish, armor and bric-a-brac, with natural detail; Lanbert, who paints marines and forest scenery; DeWittis, streams and waterfalls, and Troyon, meadows, brooks and river scenery. All these painters take great pains to emphasize the differences of things. They make it manifest that there is a beauty in minutiæ; never smudge, smear or blot, by way of impressing the spectator with their sentiment. And earlier painters, too, Titian, Raphael, DaVinci, are not afraid of detailed account of fact. You never see in their work blotted leaves, blotched grass, dough trees, cotton-wad clouds.

Ruskin says: "He who can command or produce beauty, truth or power in the motive of his picture, will never lessen its value or impressiveness by giving it accessory truths and beauties."

❋

REMARKS ON SOME PHOTOGRAPHIC FUNDAMENTALS

It will possibly serve a slightly useful purpose if we draw attention to a circumstance, more or less overlooked by the crowds of new workers and writers coming into the photographic field, that is, that the fundamentals of our subject do not vary in the slightest degree. The reading world is getting used to the word "fundamentalist." It signifies one who is dogmatic, who gets down to the brass tacks of things, and does not allow them to be obscured.

The pictorialists are making a great outcry just now, saying that technique, which they affect to despise, is merely the means to an end and nothing else. Well, what would they do without technique? You must have principles and implements to work with, otherwise you would produce nothing.

Then we are told with painful iteration that most of the inventions in photography came from amateurs. Of course. From whom else could they come?

The fundamentals of photography have not, do not, and cannot vary. You prepare

your sensitive, or receiving surface, you expose it in a camera through a lens, you develop it, you print it—exposure, development, printing, there are the three inescapable fundamentals, each dependent upon the other.

Now the mastery of these three fundamentals may involve a life's work and study. It is rare that in the individual you find them united to perfection. Take exposure, the crux of the whole business. If accurate timing were the rule, rather than the exception, development would be an automatic operation, we would have a highly simplified system of negative making, with no need for intensification or reduction. It is a good many years since Abney promulgated the aphorism that development is both a science and an art. It is, and although progress in the practice is commendably rapid, we are still groping our way towards perfection in the matter. The universal developer, such as ferrous oxalate at one time threatened to be, is still undiscovered. Each has his favorite and its name is legion.

Now, if we pay sufficient heed to the study of these fundamentals, all else will follow almost as a matter of course. You will find, on close examination, that those who have made a success of photography have done so because they have mastered the details of the fundamentals. The science, *i. e.*, the knowledge of the rudiments, precedes the art. To talk art before you have mastered the technique, is like putting the cart before the horse. This scheme won't work.

There is, we perceive, a disposition on the part of the world's pictorial leaders to over-exalt art at the expense of science in photography. The notable Mr. Tilney, who is publishing tracts on the subject, began his photographic career, if we remember aright, in a very humble way, and seems to obscure the fact in the new-found glory of his position. Mr. Stieglitz, too, was a very humble worker once and is so now, fortunately.

We are not deriding these masters. On the contrary, we admire them. But we wish they would not overlook the claims, in their published utterances, to a thorough knowledge of technique, of fundamentals, as an absolute preliminary or prelude to art work.

The "how" of the subject is all important, especially to the neophyte. The tendency to neglect it by the leaders has a bewildering effect on the earnest student. The principal thing to bear in mind is that everything has a beginning, and that the alphabetic stage is all important in connection with success. In THE CAMERA our criticism department specializes in this respect. We tell exactly how and by what methods each individual print was made. The pictures tell exactly just how intelligently these data were employed, and it will generally be found that the more the fundamentals are understood by the competitor, the better his results appear. In other words, the more painstaking he is in exposure, development and printing, the more artistic and pictorial his results. Cause and effect, in fact.

❋

The interest shown this past season in the annual "Salon of Pictorial Photography" held by Frederick & Nelson, of Seattle, Washington, has marked this exhibition as one of the outstanding shows of photographic art in America. The 1923 exhibit, which was the fourth annual show held in the Frederick & Nelson auditorium, showed a large increase both in attendance and in number of entries over the previous exhibitions. The total number of entries was 1400, and the list of contestants included professionals and amateurs of high standing in all parts of the country. Dates for the 1924 "Salon" have been set for October 20th to November 1st, and it is expected that the number of entries this year will be in excess of any previous registration.

❋

Volume IV of the *Abridged Scientific Publications* of the Research Laboratory of the Eastman Kodak Company contains in abridged form the thirty-four communications from the laboratory to various publications during the year 1922-23. While not a volume of particular interest to the average photographer, it is of special value to the scientist who aims to keep in touch with the development in photographic theory. The work of abridgment has, as usual, been well done, nothing of importance in the original papers having been omitted and the volume is for this reason particularly valuable, since it brings together in one place communications which have appeared in a wide range of journals. While not for general distribution, those in a position to make use of the volume will have no difficulty in securing a copy upon application to the Research Laboratory, Kodak Park Works, Rochester, N. Y.

OUR PRINT CRITICISM DEPARTMENT

Prints to be criticised should be sent to the Criticism Department, THE CAMERA, Philadelphia. Only one unmounted print may be sent during any month by a reader. Full data must be sent on the coupon printed in our advertising pages. Always put title, name and address, and word "Criticism," on back of print.

It is essentially difficult for the photographer to give, in his picture, expression to the intention he had in its making. He is more hampered by the mechanical impediments, imposed by camera practice, than the painter is, in employment of his mechanical agents for embodying his particular idea pictorially; and, for this very reason, it is presumptuous for the photographer to attempt in art what is beyond the limitations of photography. But within the prescribed limits photography has still done work of high merit, and the photographer possessed of artistic instinct finds considerable opportunity for exercise of feeling and sentiment in his work.

We have abundant evidence of this in the admirable groupings and the fine effects of light and shade presented by pure photography. The principal cause of failure to produce a picture which conveys idea or intention may be traced to the obsession on the part of the photo-artist that his ability to appreciate what is beautiful so endows him that all that is necessary is this stimulus furnished by its presence. He expects too much from the inspiration of the moment. Instead of approaching the subject with definite purpose of working up the suggestion it presents, he makes the exposure in confidence of happy outcome, only to discover it possesses little, if any, of the beautiful features it had to his imaginative eye.

Because he had no definite idea of construction, his work is necessarily vague, indefinite and without any particular message. He imagines that, in the few minutes he devotes to the subject, under the glowing fire of his artistic inspiration, enkindled by the beauty, grace and harmony before him, he can materialize what actually was not present, what really was a project of his vivid imagination. This is expecting too much of mechanical means.

He forgets that there are numerous refractory agents in photographic practice which are relentless and even obstructive to his imaginary conceptions, which the painter has under the immediate control of his imagination. Success in photo-pictorial work is attainable only by the acquisition of a knowledge which enables one to get a definite idea of what shall be produced in the final result. The photographer must not trust to inspiration—he must definitely work for the result.

Now the trouble is that the average worker with the camera thinks he is relieved of the necessity of study. In fact, he is encouraged in his belief by those whose sole interest in photography is increased sales of commodities. Each month we are called upon to pass judgment on pictures, not the work of mere beginners only, but of photographers who show, by their technical skill, that they know how to control the mechanical means; but, despite our repeated admonitions to study the subject for its suitableness as a means of embodying an idea, they fail to do so. And this is due to the fact that quantity has more consideration than quality.

They make no progress, because they try to fly before they know how to crawl in art. Others, who began in a tentative way, advance higher and further; those whose first efforts were crude enough, we find, get far beyond the over-confident ones who were determined to get there on a rush. It can't be done. You must know what constitutes a picture before you try to express yourself pictorially. You must know what the rules and principles of art are before you venture to be original by totally disregarding them.

In landscape there is, for instance, the rule about differentiation of the planes, without which it is impossible to give a suggestion of depth and distance in the scene. Now almost every landscape photographer knows that a landscape must have depth as well as length and breadth, but from observation of the average work, often good in certain features, the rule seems purposely disregarded. Take, for instance:

"Leaping Waters," by B. G. Smith. We have no doubt but that this subject looked most beautiful to the artist. He looked at it with a poetic eye, as his title betrays, but the glamour of the theme veiled his eyes to its lack of pictorial interest. He fails to do even justice to the facts, because he surrounds them with so much uninteresting matter that these surroundings become of more importance as space fillers than the

"Leaping Waters"

falls itself. There is everything here one could want to make a picture with, the falls, the dominant feature, but by the failure to intensify interest where it is demanded, we have, instead of a picture, a mere mass of conglomerated areas of almost equal intensity, and a mere bit of white supposed to represent the beautiful falls, no separation of the planes whatever. Everything in the one vertical plane, no depth or distance. Had the photographer, first of all, studied the proper angle of light, we would have had the water of the falls look like agitated water, instead of wool, and the quiet pool transparent, instead of an ink well. We do not know whether the photographer was pleased with his results or not. We credit him, however, with enough taste not to be—and that he sent the subject to get our opinion of it. Our suggestion is try it again, but spend the whole day if necessary to get it pictorially. Made on the Larch Mountain Trail with a Korona view camera equipped with a Goerz *f*6.8 lens. The exposure was 1/10 second in the shade at 2.30 P. M. in September; Eastman cut film, developed with pyro; print on Artura.

"Armistice Day"

"Armistice Day on the Omaha," by J. A. Benninger, is another striking example of want of consideration of what constitutes a picture. Abundant material, too, to get a number of effective pictures, but in his endeavor to get in everything possible, we get merely a mass of confusion. The eye, instead of being led into the subjects, travels up in a straight line to the top. There is no suggestion of depth, no attempt at arrangement, no composition—just a snapshot without any definite intention or knowledge of what shall be the outcome. Made at Portland, Oregon, with an Auto Graflex, fitted with a Zeiss Tessar Ic *f*4.5. The exposure at 2.30 P. M. in November in bright light was 1/35 second at *f*11. The negative was made on portrait film and developed in hydrochinone; print on Velox.

"The Doorway"

The subject of planes of picture relief, etc., are to be taken into consideration when any sort of reproduction is attempted. Here we have an architectural subject, "A Doorway," by Rev. John S. Duncan, D.D. Dr. Duncan has, on previous occasions, sent us some very good work which conformed to the rule of relief and spatial relations—landscape and groups—but in this subject he has considered relief as unnecessary, much to the injury of the subject. In the first place the illumination was not suitable to get the necessary standing out of parts. Everything is flat and in one plane. The porch, as far as tone is concerned, is the same as the walls behind it. The inner door, instead of receding as it should, is in a line with the columns. Had the light been such as to cast shadow—later or earlier in the day—there would have been a nice standing out of the parts. There should have been either more of the upper part of the building or, as he suggests, narrowing up, so as to virtually take in the porch only. We think even greater contraction than suggested would be an improvement. Made in Mercer, Pa., with a 3A Graflex equipped with a Carl Zeiss lens. The exposure in bright light at 1 P. M. in February was 1/90 second at *f*8; Azo F No. 3 print.

"A Desert Landscape"

"A Desert Landscape," by Marshall L. Murray. The subject in itself is not one lending itself particularly to artistic composition, but, nevertheless, the artist has succeeded in giving us something pleasing and pictorial, indeed has presented it most interestingly by the introduction of the tree in the foreground and by appreciating the pictorial significance of plane separation. We have interesting foreground, middle distance and suggestion of something beyond. The eye travels into the view. It has depth and relief and all three dimensions. The title is well brought out, detail is in the proper place and the different areas of the subject in good relation. It shows well the importance of studying space relation. Made in Arizona with a 3¼ x 4¼ Ansco camera fitted with an Ansco anastigmat. The exposure, in dull light at 2 P. M. in September, was ½ second at *f*22; filmpack; print on glossy Velox.

"The Country Church," by George S. Baldwin. Another good subject spoiled, just because of want of relief or standing out of parts. It is quite a picturesque subject and a good composition, but all the sentiment extracted because it is as flat as the card it is on. A building has bulk, three dimensions and you can only show the third dimension pictorially by proper management of the light and shade, and this you fail to do. Made at Saint Pierre, France, with a 10 x 15 cm. French camera fitted with a Goerz Dagor. The exposure at 10 A. M. in October in bright light was 1/10 second at *f*11. Lumière plate, developed in pyrocatechol; print on Gevaert paper.

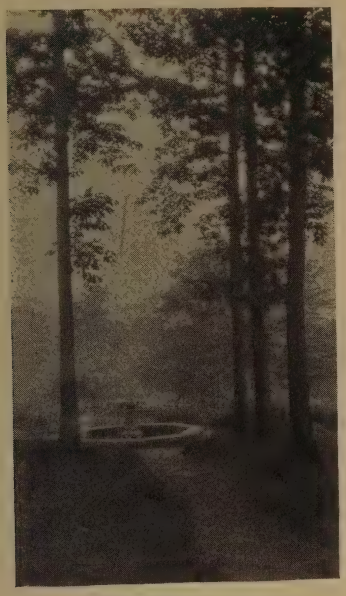
"The Country Church"

"Home Portrait"

"Home Portrait," by J. B. Gale. The head is well posed and in good attitude, fitting nicely upon the shoulders. The lighting is fairly good, but a little too direct. The head should have been turned a trifle away so as to better indicate the bridge of the nose, and the eyes should have been turned also in the same direction. Made with a 5 x 7 Seneca view camera fitted with an R. R. lens. The exposure was 1 second at *f*8 at 3 P. M. in March, the light being bright at the time of the exposure; Superspeed cut film; print on P. M. C. No. 9.

"Portland Harbor"

"Portland Harbor," by E. H. Letourney. We turn to an excellent piece of composition, a subject which demands a brief exposure and, with favorable conditions, gives good results. The point of view is well taken, so as to get the oblique trend of the shore and carry the eye into the picture. The quality is excellent and the planes of the picture presented, suggesting depth, relief and distance. Illumination very pleasing, composition well handled and the boat just in the position to give artistic balance to the subject. Made at Portland, Oregon, with an Ica Ideal model A fitted with a Hekla anastigmat. The exposure, under bright light conditions at 10.30 A. M. in May, was 1/25 second at *f*11. The negative was made on film and developed in Tancol, while the print is on Velox.



"The Fountain"

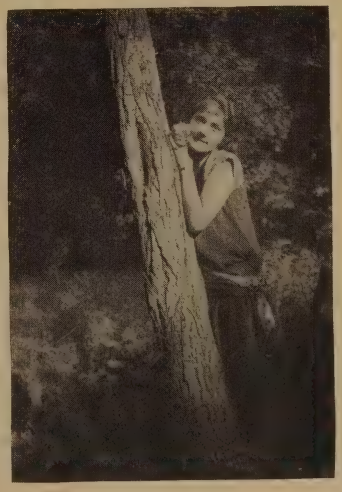
"The Fountain," by A. C. Myers. The planes are well presented, but the subject lacks unity. The scenery is good and well taken, so is the fountain, but the two do not harmonize or serve to interpret each other. Made in Oil City, Penna., with a 2C Kodak fitted with a Kodak anastigmat. The exposure was 3 seconds at *f*16 in cloudy light at 6.50 P. M. in June.

"My Wife," by F. W. Rickson. The pose is bad and is what is called a sliding off pose. and besides the head is too directly in the centre. The shadow cast on the door forms an unpleasant repetition of the head, and the dark door-knob is very prominent. The angle of illumination was not such as would give modeling to the face, but such as to cast it into one uniform tone with an

"My Wife"

unpleasant shadow of the nose on the face. Read up some of the recent papers in THE CAMERA on portraiture for beginners. This portrait has nearly all the faults possible. Made with an R. B. Telescopic Graflex fitted with an *f*4.5 Bausch & Lomb Tessar. The exposure was 5 seconds at *f*4.5 in bright light at 3 P. M. in March.

"Close Friends," by Bennett T. Meyer. The tree is wholly unnecessary, plays no part and is unsightly in itself. Surroundings distracting and but little related to the topic. The model looks capable of suggesting a picture. Made with a Seneca camera fitted with a Wollensak lens. The exposure was 3½ seconds at *f*32 in bright light at 3.40 P. M. in August; filmpack; print on Haloid soft.



"Close Friends"

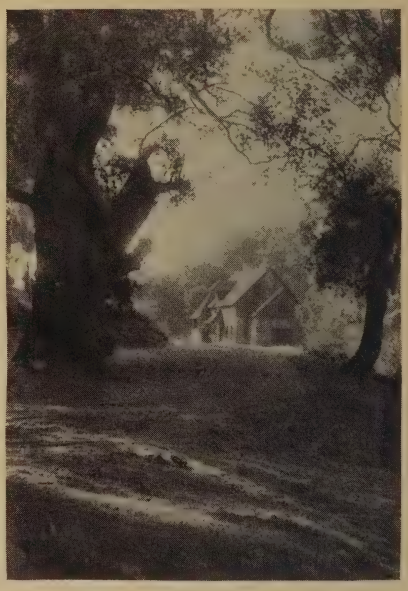
"Mexico"

"Mexico," by H. H. Miller. The group is arranged in a natural and pleasing way and the surroundings novel and well managed. The soft effect adds to the character of the picture. Made at Torreon, Mexico, with a Rexo special fitted with a Goerz Dagor. The exposure was 1/10 second at 4 P. M. in March, the light being dull at the time of the exposure; print on Artura medium.

"The Creek," by Anton Krivanck. Nothing particularly attractive in a subject like this, which might be anywhere. About half the picture is useless, that to the left. An improvement might possibly be effected by trimming away the left side, but even then the lighting is so flat that everything would be projected in the one vertical plane. Made near Chicago with an Auto Graflex, fitted with a Cooke anastigmat. The exposure in bright light at 3 P. M. in August was 1/135 second at *f*8. Hammer Blue Label plate; Rexo hard 4 print.

"The Creek"

"Where the City is Forgotten," by Herbert R. Mason. Here is another excellent example of the pleasing effect from observance of space relation. The selection of the subject displays possession of feeling for the value of line in composition. It is in good decorative value. The individual features are graceful in themselves and are associated with taste and judgment for effect. Note the fine old gnarled tree on the left and the graceful curve formed by the tree on the right, forming a beautiful line by closing in at the top, and the picturesque group of houses just in the right position and in the proper tone to suggest distance. How the eye wanders into the distance, which suggests miles away. The foreground, too, is in good tonal contrast, diversified but not over-emphasized. It is



"Where the City is Forgotten"

a charming picture, and gives evidence of artistic ability and of careful study for the best effect. This picture bears analysis, and conforms to the rule of art, but at the same time has individuality of treatment, and so is original. Made in Southern California with an Ansco No. 3 fitted with an Ansco anastigmat. The exposure in bright light at 1.30 P. M. in December, was one second at *f*7.5 (a 7x filter being used); commercial ortho film; enlargement on glossy P. M. C. bromide.

"Our Front Porch," by L. H. Longwell. One cannot understand why a snapshot should be taken of such a staple thing as a building, and yet we have here 1/25 second exposure given where 5 seconds might

"Our Front Porch"

have been indulged in. The result is a hard, unpleasant, chalky thing, without shadow or relief of parts. Hard as wire. The camera was placed too low, hence the exaggerated perspective and unpleasant distortion. Made at Oak Park, Ills., with a 4 x 5 Speed Graphic fitted with an Ic Tessar. The exposure in bright light at 11 A. M. in July was 1/25 second at *f*16. Filmpack; print on Haloid Rito No. 31 Soft.

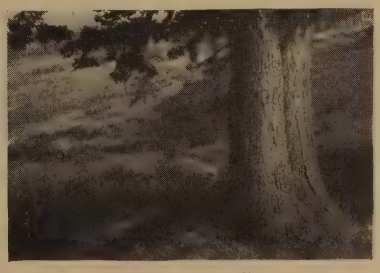
"Mae," by Louis Elowitch. Everything bad in a portrait is here manifested. Posing strained, illumination bad, making the face flat and without expression, and destroying modeling in the flesh. Background full of unnecessary incident and unpleasant lines. The arms badly managed, particularly the left arm, the chair back repeating the mass of the body, and figure unnaturally cut off at the bottom. Made with an Ideal Ica, fitted with a Dominar *f*4.5 anastigmat. The exposure was 1/10 second in dull light at 10.30 A. M. in July.

"Mae"

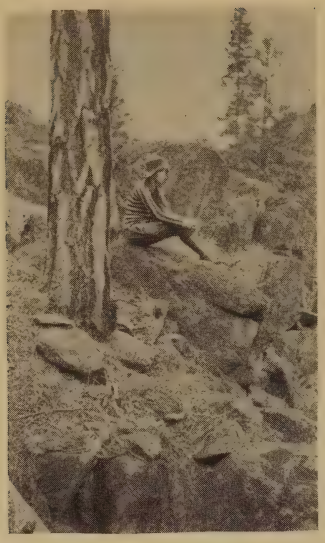
"Taking Mother's Picture"

"Taking Mother's Picture," by Mrs. Wm. Hendricks. The light was too strong and direct, with the result that the contrasts are too pronounced, shadows heavy, high-lights harsh and chalky, and no intermediate tones throughout. The light should have been screened. Made at St. Charles, Minn., with a Kodak Junior fitted with an anastigmat lens. The exposure was 1/25 second at *f*11 in bright light at 4.30 P. M. in September; print on Azo grade F No. 3.

"Landscape," by Duncan B. Gardiner. Hardly a landscape study nor a study of a tree either. More of the subject should have been presented. What is exhibited of the tree indicates that it is worthy of pictorial treatment. The photography is good, but there is no attempt at composition. Made at Holyoke, Mass., with a 3¼ x 4¼ Kodak fitted with a Kodak anastigmat. The exposure at 4 P. M. in bright light in July was 1/12 second at *f*7.7. Kodak film, developed in borax M-Q; print on Cyko.



"Landscape"



"A Restful Moment"

"A Restful Moment," by Calvin R. Limpracht. There is too much uniformity of tone, and too many distracting elements which draw away attention from the figure. Interest in the topic here is demanded, but you make it only of minor consideration. Made at Durango, Calif., with a Kodak fitted with an R. R. lens. The exposure in cloudy light at 4.30 P. M. in October was 2 seconds at U. S. 4. Ansco film; Azo No. 4 print.

"Guantanamo River Ford"

"Guantanamo River," by Charles T. Ramsden. A pleasing bit of composition in sharp focus. The foliage is well indicated and the introduction of the animals gives added interest. The foreground is particularly good—a nice association of light and shade. The quality of the water is nicely brought out, and the planes of the picture, though not pronounced, are sufficiently differentiated to give a good perspective. Made with a Premo No. 12 fitted with a Goerz Dagor. The exposure was 1/25 second at *f*16 at 11.30 A. M. in August; filmpack was tank developed; print on Azo.

"Little Appletoter," by Sarah Moss. The pictorial planes are here shown, which gives the picture depth and makes the figure stand out in good relief. This figure is well managed to suggest movement and action and muscular activity. There is progression along the road. The lighting is excellent, both the flesh values and the draperies are indicated. The photographic work is very good. Made in Georgia with a 2A Brownie fitted with a universal lens. The exposure in bright light about 11 A. M. in August was 1/25 second at the largest opening. The film was developed and printed by a finisher.

"Little Appletoter"

"The Monastery Garden," by Eric Huxley. The lines of the composition are such as to lead into the distance. That is the linear perspective is pleasing and in accord with normal vision. The various parts are properly distributed, and the relief throughout is well sustained. Planes quite well indicated. Made at San Juan Capistrano, California, with a 1A Ansco Speedex camera fitted with an Ansco anastigmat. The exposure at 11.30 A. M. in bright sunshine in January was 1/25 second at *f*8. The Eastman Speedex film was developed in M-Q and the print is on special Velox.

"The Monastery Garden"

"A Vermont Valley"

"A Vermont Valley," by Howard K. Rowe, is another ill-composed subject. The lines are unpleasant, and there is no differentiation of planes, so everything rushes forward to the eye and we get no idea of distance. Made at Bolton, Vermont, with a 2C folding Premo fitted with an R. R. lens. The exposure was 1/25 second at *f*11 at 2.30 P. M. in bright light in August.

*

A PHOTOGRAPHIC ENCYCLOPEDIA

There is a singular lack in English technical literature of the voluminous and comprehensive works on photography to be found in other languages. Readers of French and German have at their disposal exhaustive treatises covering practically every branch of the theory and practice of photography in a systematic and authoritative manner. There are, for instance, no works in English which will compare with Eder's *Ausfurliches Handbuch der Photographie,* the authority of which is recognized by photographic scientists the world over, or Fabre's comprehensive *Traite Encyclopedique de Photographie.* An attempt was made several years ago to compile a similar work in this country, but the movement lacked the proper scientific direction and the work failed to meet the demands for an authoritative reference work of photography. The *Dictionary of Photography* and Cassell's *Cyclopedia of Photography,* the latter now out of print, are excellent so far as they go; neither, however, can claim to cover the ground demanded by a work of this kind.

It is time that some steps be taken towards remedying this deficiency in our technical literature. Photography has developed and is still developing rapidly, and its importance to life and industry is growing greater every day, and an authoritative source-book, or encyclopedia, is badly needed to fill this ever-widening gap in our technical literature. Such a work should contain a complete account of the development of photographic processes, of the theories advanced from time to time by various authorities to explain the mechanism of these processes, together with the evidence for and against each of these theories and a summary of the present conception of the subject. To be of real value, such work must necessarily be done by scientists who have taken an active part in the development of that branch of the science, or else have made a thorough study of the subject. Furthermore, the work must be under the supervision of a competent editorial staff, composed of the best authorities of the day, in order to weigh and determine the disposition of the problems met with in compiling a work of this kind.

From this it will be seen that the matter is not simple and that it is beyond the capabilities of even a group of investigators, but demands the services of authorities of every country and language. It is exceedingly doubtful if any publishing firm in this or any other country would undertake the compilation and publishing of a work of this kind, owing to the high costs of such publishing and the comparatively small demand for photographic works of this character. It would seem that if we are to have such a work in English, the movement must be sponsored by some influential society, such as the Royal Photographic Society of Great Britain, the Eastman Research Laboratory, the British Photographic Research Association or a combination of all allied scientific societies and the photographic interests of English-speaking countries.

English is now the mother-tongue of more people than any other language and English-speaking investigators are largely responsible for the rapid advances in the theory of photography, as well as its practical development, and we can conceive of no greater service on the part of the Royal, or any other organization in a position to sponsor the work, than to provide for the publication of an authoritative cyclopedia of photography, which will serve to bring together in one place and in their proper relations to one another the many separate papers of experimental work on the theory of photography that have been published in the past few years.

QUESTIONS and ANSWERS

All questions relating to technical matters, processes, working instruction, etc., are referred to competent experts in the particular subject referred to, and the utmost is done to insure reliable and practical answer being given.

Correspondents are requested to first state their case, and then number each question. They should also write on one side of the paper only, and enclose correct name and address---not necessarily for publication. No attention will be paid to anonymous communications nor to those only signed with initials.

We do our best in all cases to publish the replies in our next issue following the receipt of the inquiry, but cannot absolutely guarantee this.

In our store, the other day, a man asked for and insisted on getting a filter with no color. We told him there was no such thing—why would one want a colorless filter? Is there such a filter?—P. T.

An esculin filter would be practically colorless. This filter would, however, cut out all haze and make a snappier picture of distance. These filters can be obtained, but they may turn brown with age or by exposure to light. Esculin filters are good in telephotography and will clear up veil on such exposures in a wonderful manner.

In my bromoil printing I have difficulty in getting an ink that is tacky and at the same time working under control. I have used some five or six makes, but they do not give me the richness that is desired. Can you recommend a satisfactory ink?—A. C. S.

Mr. Floyd Eugene Vail made the same complaint to us and we had the Crowe Printing Ink Co., 724 North 3rd Street, Philadelphia, make up some special ink for the purpose. Mr. Vail tells us it is perfection for the bromoil workers and is the best ink he has ever used. It may be had in two ounce cans for a dollar.

I saw a 11 x 14 picture of a school group with the names under each picture of the fifty students. I am told they were made with a movie camera. Do you know who makes such apparatus?—J. B. T.

From your description we judge this is the Willson Magazine Camera and prints made on the Willson Automatic Photo Printer, made by the Vicam Photo Appliance Corporation, 1224 Belmont Avenue, Philadelphia. This camera uses unperforated motion picture film and the printing is done in a long strip. The camera and printer have just been placed on the market for sale.

Can a focusing magnifier be fitted to a reflecting camera and where is it placed?—

Sometimes a special pair of glasses, like spectacles, are used. These hang over the edge of hood. The object is to magnify and to bring the sharp focus on the ground-glass at an eye distance such that the face may be put against the hood and exclude all light. Your local optician should be consulted. He can figure lenses to accomplish this result. The glasses may be used in connection with ordinary eye glasses, or in some cases the magnifying set contains modifications incorporating the ordinary prescription and permit removal of regular ones when focusing. Some European manufacturers place a set of magnifiers in the hood and these fold back out of the way when hood is collapsed.

I am appealing to you because of a controversy through my dealer about getting a telephoto attachment fitted. The makers refuse to send one without having my lens at hand and I cannot spare it from my daily work. Why is it they cannot fit it to another lens like mine?—G. A. A.

You are asking the impossible. You can readily realize that the manufacturers want your business and would not put obstacles deliberately in your way. The facts are that lenses vary in focal length. The magnifications on a telephoto attachment run from three to nine times. With a seven-inch lens, the nine power would be the equivalent of a 63-inch focus lens, but if it were 7⅛-inch focus, would then correspond to a 64⅛-inch lens. The separation between telephoto element and your lens fitted at the end of the attachment must vary according to certain optical laws and it is important that scale markings be put on correctly. To do this, the actual lens must be at hand. Adapters must be made and

the threads fitted. If your lens is in a shutter, these threads must be known accurately. If fitted in shutter and scaled for magnifications, the graduations will not then be correct, if the lens is transferred to a barrel, even if both threads happen to fit the same adapters. You naturally wish to have the whole system in the correct optical adjustment, with correct scale markings. It is therefore necessary to have all parts at hand for such adjustments. Assuming that the adapters could be made of correct length, it would still be necessary to have the lens at hand to make the scales. This is one of the reasons why telephotos are not sent on approval like ordinary lenses. All work done on your adapters would be wasted, as new ones and new scales would probably be needed for the next order, should you decide not to purchase for any reason whatsoever. If you really need a telephoto, you certainly want it free from criticism and perfectly workable when you get ready to use it.

Will you give instructions for night photography, like store windows?—A. O. P.

We cannot cover such a special subject in a short space, but can give you a few hints. The exposure should be fairly long, because you will have constant interruptions and will have to shade the lens with plate holder slide during such times. This means stopping down somewhat, so that the interruptions may be relatively short compared to the total exposure time. The tripod must be rigid and it is better to use a cap than a finger release, as on setting shutter you may forget to set it and not make the exposure at all. The plate holder slide will serve to block light during the passage of automobiles and street cars. Film is excellent for night photography, on account of its non-halation properties. Develop with dilute developers and do not print on the harsh papers. Exposure varies tremendously according to the subject and you can learn more by one or two trial and error experiments than in any other way.

I am not satisfied with the performance of my lens and I have made a number of tests with it. These show changes in definition at various areas on the tests. Will you look over test print sent and give your opinion?—D. B. Y.

Examination of the print brings up the question of contact between negative itself and the plate. We cannot tell from one print whether this is really so or not. For critical examinations, only the original negatives are a reliable guide. Obviously the sensitive material must lie absolutely flat. It often does not. Film may buckle. Plates are concave. The register of your plate holder may be defective. The sensitive testing material must lie in the plane of the image exactly. If a lens has defects, these usually show a sharp centre and less sharp corners, or sharper corners than edges. With a very concave plate and a plane image, you might have sharpness in a ring around the centre, with less sharp corners and central parts. With printed matter for test objects, the paper may not be exactly flat, owing to folds preventing its absolute flatness. Sometimes letters and lines are slurred on the test objects, or not of equal density photographically. There are dozens of reasons. Send us the test plate itself. It would be better to ask the manufacturer to test it. A difference between his results and your own would point out possible discrepancies, in your tests, your camera register, or squareness of your test object to lens axis, etc.

When was hypo introduced into photographic practice and by whom?—G. G. K.

The date is 1839 and the discoverer of the hypo properties was Sir John Herschel, a noted astronomer of England. This followed his researches on hyposulphurous acid and its salts. The modern chemical name of this body is thiosulphuric acid, a different chemical, entirely different, being the hyposulphuric acid of today. Hyposulphite of soda or hypo, however, is the popular name of the fixing salt. He found that silver chloride would dissolve in fairly concentrated hypo almost like sugar in water. He describes the mixture of silver salt solutions and hypo solutions. When hypo is in excess, a clear solution results. When the silver is in excess, a dirty precipitate falls and discolors. This simple experiment gives startling proof of the necessity of having hypo baths of suitable strength and not overworked if proper fixing is to result. He also alluded to the curious fact that hypo solution plus dissolved silver chloride has a very sweet taste, directly opposed to the disagreeable metallic taste of hypo solutions alone.

What is flash light powder made of? I am told that some flash powders have oxides mixed with them to make them burn faster. Are all flash powders magnesium metal?—D. O. M.

Most flash powders are magnesium metal and an oxidizer. Under no circumstances should they be used in a closed receptacle, or mixed with any other chemical. Let the maker do this at time of manufacture. If you use such powders intelligently, there is no danger, but it is well to abstain from experiments in mixing them yourself. Aluminum is sometimes used in place of or in combination with an oxidizer like potassium chlorate. These chemicals sometimes contain admixtures of water-absorbing impurity, which makes a caking on the surface and confines gases, making an

explosive burst. Such an occurrence happened at the launching of a cup defender many years back, when some home-made flash powder was used. We are glad we have your question so we can emphasize the wisdom of leaving the manufacture alone and pointing out the fact that reputable powders are practically safe. Salts of various metals are mixed with the metallic magnesium, not its oxides, but when they burn oxides of magnesium (or aluminum) are formed. This is the smoke. Experiments to speed up the flash have been made and in Agfa we understand that thorium nitrate was used. This burns to thorium oxide and as this oxide is the cause of the Welsbach mantle brilliancy, we have the magnesium flash augmented by the thorium oxide incandescence. Such powders are not only fast but the smoke is much less. Anything which will reduce the smoke nuisance is, of course, an advantage. The quality of light is good. It is adapted to color value effects because there are some yellow-green rays. Hydroquinone is unsuitable for flash light development because of harshness. Metol, pyro and rodinal are better developers for flash exposures.

Will you inform me if all shutters work the same as my curtain shutter in cold weather? I have had trouble each winter, the shutter always works slow. We are in upper Canada and we have lots of cold spells.—G. A. V.

This seems to be a common trouble with similar shutters. The rubber gets less pliable and rolls stiffly. We put this matter up to one of the camera manufacturers and they suggest also that lubrication may have something to do with the case. Curtain shutters need slight lubrication, whereas none is needed on the metal interlens types. They use a tiny amount of Albany grease, but use less in winter than in summer. All coiled springs are affected by cold. Shutters should not be put away with a spring under tension. This refers to all shutters, curtain type or interlens. In high altitudes, it is well known that the weather affects pump shutters. The moisture in the air retards the pump action and on the blades of any type of shutter there is a certain friction retard by the air layer between the shutter leaves. This we have personally noted when on a mountain snow field when a cloud shadow passes over the camera. For a moment or two, when cold and damp, the retard persists. It is possibly caused by condensation of moisture between the blades. The effect disappears when we wait for a moment, or if the sun breaks through and warms the shutter. Motion picture operators have used on bearings a special oil from fish refuse. This will stand quite extreme cold temperatures.

Why is it that persulphate reducer from various batches of persulphate does not work the same? Does persulphate spoil by keeping?—O. L. M.

The action of ammonium persulphate on a negative is not well established by photographic chemists. There seems to be a complicated reaction by which silver persulphate is formed and this in turn reacts on the silver image. When all works well there results that peculiar and useful action where the reduction is on the over dense parts, the more delicate parts being protected. It is therefore suggested that a little silver nitrate be added to a slow acting persulphate bath, and this may overcome its sluggishness of action in starting. It is known that various waters have a retarding action, and chlorides in waters may be the cause. Sheppard suggests that the iron impurity in water may be the cause of differences. With a tiny impurity of iron, a 5% solution was active at once. With more iron, only a 2% solution could be used. With only a trace, a 5% was then very inactive, and would not work in 15 minutes. A little iron alum or a tiny quantity of silver nitrate speeded it up so a 2% solution was quite active. The tolerance of iron permissible is stated to be 1 to 2 parts per 1000 parts of solid persulphate used.

My attention was called to an 8 x 10 portrait outfit offered with a 12-inch lens. I am advised to buy it for my new studio. Is the focus long enough?—P. K. W.

We would not advise its purchase. The lens is too short in focus for good perspective. We would strongly recommend a longer focus lens, 14 to 16 inches, even 19 inches if you can afford it. For home portraiture, it would be all right, but you would not be using a standard portrait outfit and its stand for this. A 12-inch lens will, of course, have more depth at full opening, but the images are smaller than with the longer focus ones we mention. For a short studio, you may have to use a short focus lens, not because it is better, but because you are forced to do so. A 12-inch lens makes a 1-inch head at 10 feet, a 2-inch head at 5½ feet, a 3-inch head at 4 feet, a 4-inch head at 3½ feet, a 5-inch head at 2⅝ feet, a 6-inch head at 2½ feet, etc. A 16-inch lens takes 13⅓ feet for a 1-inch head, 7⅓ feet for a 2-inch image, 5⅓ feet for a 3-inch head, 4⅔ feet for a 4-inch one, etc. To get 6-inch standing figures, the 12-inch needs 12⅓ feet distance, but 16-inch takes 17¼ feet. If you only had 17¼ feet maximum, you could not make a smaller figure, but a 12-inch in same distance would allow figures about 4½ inches high. Note it is the small size images that present the difficulties.

Which is the better practice in copying: focus sharp full opening with short time, or stop down and give proportionally longer exposure?—D. D. A.

Circumstances will govern the procedure, but the first method is the better when you can use it. With an anastigmat, you can find a critical focus. If the lens has some zonal aberrations, you will have a slight shift in focus as you stop down, but depth will increase and practically correct the shift. The image size may be a little bit different than the ground-glass image. Such stopping down as you may need in practice with anastigmat flat field lenses is to take care of any slight concavity of plate or any buckling of film. If register and flatness of sensitive surface are accurate, the stopping down should not change the image size. But with an R. R. lens, you may need some stopping down before you can get the same sharpness in the centre of the image as in the corners. Sharpness must be attained especially in black and white subjects. When stopped down, the exposure must be longer, but the chance for halation of fine lines is increased, and any vibration has time to affect the image. The evenness of illumination is sometimes better with open stops, and in general the first method is the better procedure.

How can I rig up my folding 3A camera so I can make direct enlargements of small objects, insects, seeds, etc.? Can I buy a supplementary attachment for this?—D.

These would serve to some extent, but the real way to do this would be to take a small lens, such as is used on miniature cinematograph cameras. Lenses are obtainable of 20 and 30 mm. focal length. They could be mounted so as to screw into the flange or clamp ring which holds the present lens and shutter in position. Another way would be to have it mounted bodily into the cell opening of shutter, the regular lenses being removed, with diaphragm opened up wide so as to be out of the way. The enlargement possible depends on the extension available. In a 3A camera, with single extension, about nine inches is available. On a double extension using plates, there is twelve to fourteen inches. With about 8 inches bellows, or 203 mm., the enlargement is about 9 times with 20 mm. lens, the object being about 22 mm. or a little less than 1 inch from the lens. With a 30 mm. lens, the enlargement would be about 5 times and object about 35 mm. from the lens, approximately 1½ inches. The use of a film camera would demand accurately scaling of a special distance scale. If you have a plate back, the difficulties would disappear. Owing to closeness of object to lens, there may be some difficulties regarding illumination of the object.

I have a lens on my 3A camera, 6½-inch focus and want to use it for copying reading matter down to size of 3 x 5, the standard card index size. Will my lens shift in focus when stopped down? What bellows extension will I need? Will f values change for different sizes?—H. Q.

To make a 3 x 5 image of a 3 x 5 card, you need about 13 inches bellows. Unless the lens is of an older and faulty construction, it will not shift in focus. Some older lenses did this and image size on the negative was different from that on the ground-glass. The object being copied in above case would be in focus at 13 inches from the lens. For an original 6 x 10 inches copied 3 x 5 inches, the extension would be 9.7 inches and copy distance 19.5 inches. The exposure will vary according to reduction ratio. At same size, the *f* values will be one-half the actual values of stops as marked and exposure 4 times greater. For one-half size reduction, the exposure required is 2 times approximately, the new stop values being 1.46 times the figures marked on the lens. The process film or plate emulsions with contrasty developers are much the best for black and white copying.

*

Judging from reports in French journals, the Exposition of the Photographic Industry, which was recently held in Paris, was a great success. Practically every important manufacturer of photographic apparatus and materials in France was represented, as well as several foreign products, which are well known on the French market. In all about 96 firms were represented. Among the exhibitors of cameras and apparatus were Gaumont, Demaria, Jules Richard, Francia, Demaria, Usines Gallus, Pathé, Mackenstein, Noxa, Tiranty and Kodak.

Opticians manufacturing photographic objectives were represented by Hermagis, Krauss, S. O. M. Berthiot, Barberon (successor to Darlot), Roussel, Duplouich, and Clement. Parra Mantois et Cie, the celebrated French manufacturers of optical glass, were represented by a collection of the principal glasses used in the construction of photographic and telescope objectives. Manufacturers of sensitive materials were represented by Lumière and Jougla, Guilleminot, Grieshaber, Crumiere, Bauchet and Poulenc. Cinematography was well represented by such firms as Pathé, Cinoscope, Gaumont and Demaria, while the principal photographic publications and societies were also in evidence.

VIEWS AND REVIEWS

The following formula has been recommended in the *New Photographer* for the removal of stains resulting from the use of a desensitizing bath of phenosafranine:

Potassium permanganate....	2 grams
Sulphuric acid.....	10 c. c. s.
Water	1 liter

*

From a note in the *Amateur Photographer and Photography* we observe that the process of photo-sculpture introduced by Capt. Edmunds in 1921 and communicated by him to the R. P. S. (*Photographic Journal,* 1922, page 84), is being introduced commercially. Studios have already been opened in London and also in New York and it is reported that a number of prominent men in New York have already been "photo-sculptured."

*

There will be on exhibition at the rooms of the Photographic Society of Philadelphia, from May 13th to June 10th, 1924, a display of the work of Mr. Floyd Vail, F.R.P.S., of New York. This will be the closing exhibition of the season and none should miss this opportunity of getting acquainted with the work of Mr. Vail.

These one-man shows are of much educational value, and besides they show how photography may be used for expression of the individuality of the artist and what a remarkable advance it has made of late.

*

There is no question of the fact that in a very few years amateur cinematography will be as widespread and as common as still photography is today. The introduction of a standard small-dimension film has, we think, been a step in the right direction, as a large number of both domestic as well as foreign manufacturers have adopted the smaller film introduced by the Kodak Company. The use of a smaller film, coupled with the feature of reversal, makes amateur cinematography hardly more expensive than ordinary still photography, while the former is without question the far more interesting of the two.

At a recent meeting of the Societe Française de Photographie further specimens of results secured on Autochrome plates hypersensitized by the method of M. Ninck (see THE CAMERA, 1924, page 181) were shown by the inventor. The examples shown received an exposure of 1/25 second in pale light in February, the aperture of the objective being *f*3.5.

*

The camera has been used for "spirit" photography over a period of nearly a half century and we are glad to see that Mr. W. Marriott, an investigator for nearly that length of time, has come out boldly in a communication to the Royal Photographic Society, and authoritatively exposed the deception by which these things are produced. Nobody controverted Mr. Marriott, so we hope the matter is definitely laid to rest for good and all. One would have thought the protagonists of the cult would have turned up in force to combat Mr. Marriott, but not a single individual appeared to either listen to or controvert him. Far different from the old days when heated discussions were frequent.

*

Methods of obtaining warm tones on lantern slides and transparencies by overexposure and development in a solution highly restrained with soluble bromide have long been known and have been extensively used by lantern slide makers, but no attempt, so far as we know, has previously been made to determine in a quantitative manner the relation between exposure and development and the color and the gradation of the slide. Messrs. T. Thorne Baker and L. F. Davidson, of the Imperial Dry Plate Company, however, have taken the matter in hand and investigated by means of neutral wedges the relation between the time of exposure and the time of development on both color and gradation. It is impossible to give a resumé of this interesting paper in the space at our disposal and we refer those interested to the original paper in the *British Journal of Photography,* 1923, page 77.

Thomas Alva Edison has recently been the recipient of public compliments on his reputation as father of the movies. A reception was tendered him and there were present, among others, Mr. George Eastman, Dr. Lee de Forest, and notable figures in social, industrial and political life.

*

"Kinematography (*i. e.*, Motion Pictures) and its antecedents" is the title of a lecture recently delivered in London before the Kinematograph Group of the Royal Photographic Society. It contains much original matter and research data never before, to our knowledge, printed and published. We note with interest that mention is made of the work of the Philadelphian, Dr. Heyl, who, in 1870 with the phasmatrope, secured a number of consecutive photographs on a glass disc and gave a public exhibition.

This instrument is now in the possession of the Stanley Co. of America. It is thus apparent that in both branches of photography, the Quaker City was early in the line of progress.

*

"Snapshots I have missed" is the title of a very interesting article we have just read. While there is nothing of a particularly constructive nature in the deliverance, yet the poignancy of the writer's regret that he did not have his camera with him when he saw the incidents and groupings he would like to have photographed, adds a value to the moral, namely, always be ready with your camera

Most of us miss things in life simply because we are not ready to take advantage of them. In the spring and summer a wealth of material awaits the amateur photographer out-of-doors and he should be ready to take advantage of the opportunity of being able to photograph it.

*

Photographs for the Papers—How to Take and Place Them. John Everard. Cloth, 96 pages; $1.25. MacMillan & Co., New York City.

This book is well written and the suggestions it offers are of a kind to be of practical value to such as are desirous of engaging in work which shall be acceptable to the public press in its various forms of daily, weekly and monthly issues. The author is an Englishman and all he says has reference exclusively to English press demands, but much of a character of general application may be derived from its pages.

Print Perfection—How to Attain It. Dr. B. T. J. Glover. Price: Cloth, $1.25; paper, 75 cents. American Publisher, Frank V. Chambers, 630 S. Franklin Square, Philadelphia.

Where there are published ten books devoted to negative making, there is but one treating of the fundamental principles involved in printing from the negative. In 1890 Hurter & Driffield issued their researches which sought to place operations upon some scientific principles, but as the subject was treated in a technico-mathematical way, the publication served but little the wants of the practical worker. This need was, in a measure, met subsequently by the publication of John Sterry's *Photography By Rule,* but this too was pretty much a *resumé* of the original investigations of Hurter & Driffield, and not particularly helpful because of its indigestibility by the non-scientific.

Watkins' *Factorial Method and Time and Temperature Development* later came to the rescue, making the subject more understandable, but it has remained for Dr. B. T. J. Glover in his book, *Perfect Negatives and How to Make Them,* to fill the desired want. Dr. Glover showed his judgment by presenting things in a clear, intelligible way and in comprehensible language, so that the valuable work of the original investigations is now brought down to practical application, and now here he supplements this excellent work on the negative by his equally good book on *Print Perfection.*

A careful following of the rules and principles so clearly set forth in this book will put the printer in a position to get the best possible results from his negative in his print, inasmuch as the fullest details are entered into as to lighting, exposure and fixed time of development for gas light papers and the factorial development of papers in general.

It is just the book the pictorial photographer has been looking for this long time, and here he has it without having to study his calculus or worry himself with differentials, abscissas, ordinates, curves, etc.

*

Photographie des Couleurs. J. Thovert. Librarie Octave Doin, 8 Place de L'Odeon, Paris. Price, 17 francs 60 centimes.

This work of a little over 300 pages, by Prof. J. Thovert, of the faculty of science at the University of Lyons, forms volume 7 of the *Encyclopedique Scientifique, Bibliotheque de Photographie,* issued by the Librarie Octave Doin under the direction of A. Seyewetz, well known for his numerous contributions to photographic science in collaboration with the Lumières.

We see announced in the French journals the death of M. Hector Colard, one of the first and foremost members of the Association Belge de Photographie. By his translation of a number of English photographic works into French, he had rendered a distinct service to the photographers of that country.

*

The Sixty-ninth Annual Exhibition of The Royal Photographic Society of Great Britain will be held in London, September 15th to October 25th, 1924. Exhibits must reach London on or before August 15th. Entry forms may be obtained from the Secretary of the Royal Photographic Society, 35 Russell Square, London, W. C., England, or THE CAMERA will send a copy upon receipt of a two cent stamp.

*

Repeated efforts have at last been successful in organizing a new Camera Club in Chicago under the title of the Fort Dearborn Camera Club. A club room has been secured at 326 River Street, and complete work rooms have been installed, equipped with everything necessary for the finishing of the negative and print. The membership is open to both men and women, amateur or professional. The following officers have been elected: President, Ralph L. Hawkins; Treasurer, C. W. Frankenberger; Secretary, G. P. Wright, of whom further particulars may be had from 4560 Oakenwald Avenue, Chicago, Ill.

*

A club to be known as the Highland Photographic Club was organized recently at the home of Frank Bennett, 7 Orchard Street, Holyoke, Mass. Plans were discussed to increase the membership of the club.

The following officers were elected: President, Francis H. King; vice-president, William B. Hutchins; secretary, Ernest D. Krause; treasurer, Frank R. Bennett; executive committee, Peter W. Hickey, Hong Whu and Halford T. Wheeler.

Following the election of officers an interesting program was given. Mr. Hutchins gave a talk on "Panchromatism." S. Campbell discussed qualities of different photographic lenses and stereopticon views were shown illustrating the properties of these lenses. The executive committee is planning many activities for the coming year, and much success is anticipated.

Two photographic veterans have recently passed away in Europe who had notable careers. H. G. Heyburn was for fifty-one years associated with the well-known optical house of Ross, Limited. G. E. Thompson was formerly a partner in the Liverpool firm of Robinson and Thompson. Both gentlemen died at an advanced age.

*

The reversal of the photographic image from a negative to a positive has taken on a new interest since the application of the same to amateur cinematography by the Kodak Company. The whole subject of reversal processes is reviewed by E. Stenger in a communication to *Kinotechnik,* 1923, page 341, from the first method in 1862 down to that of Capstaff and Bullock. The various processes of reversal are divided into two classes: "quantitative," when the whole silver bromide remaining after development and the following operation of oxidation is reduced in the second development, and "selective," when only a part is reduced.

*

A number of Montreal amateur photographers feeling that an independent association is required in Montreal, met recently and formed such an association, which is to be known as "The Photographic Circle of Montreal."

P. J. B. Brass was elected president, W. G. D. Boronow treasurer, M. D. Segal secretary, and there will be a representative advisory board selected at the next meeting.

The Circle will be open to amateur photographers who would welcome this opportunity of finishing their photographs outside of their home. Meetings will be held at 470 Melrose avenue, Montreal, Quebec, and amateurs who are interested in the aims of the association are invited to attend.

*

We are glad to see that so experienced a writer and experimentalist as Dr. H D'Arcy Power, M. D., is devoting much attention to stereoscopy and publishing a great deal about it, accompanying his text with many explanatory illustrations. He draws particular notice to the stereoscopic portrait. He says: "In the twenty odd years, during which I have read practically all the serial photographic literature of Europe and America, I cannot remember a single paper devoted to stereoscopic portraiture." This class of work, he points out admits of the use of soft focus lenses. He

advocates a focal length of five inches for the lenses. With this no exaggeration of the forepart of the figure is perceptible. Dr. Power's interesting papers appear embellished with a stereo portrait of himself, and other stereoscopic studies. It is to be hoped that the light cast on the possibilities of this interesting branch of work will lead many others to it.

Stereoscopic daguerreotypes were produced in large numbers, many of them are still extant. And in the collodion days stereoscopic portraits were made. The rules for taking an ordinary single portrait apply pretty much to the double pictures. And if you can take a stereoscopic view successfully you can succeed just as easily with portraits, provided you do not produce exaggeration or distortion of relief with too short focus lenses, or under-expose. Above all things, as Dr. Power points out, the studio conventions have no place in stereoscopy. To have the illusion of life, the subject must be doing something, not merely posing, painting, writing, sewing, peeling apples. "When action is secured the stereoscopic picture will be that of a living person and not of a statue or marionette."

*

THE STAND CAMERA

Slowly but surely the stand camera is passing out of use among the rank and file of amateurs as well as the more seriously minded pictorialists. In fact, it is hardly too much to say that the stand camera is now strictly a professional instrument. We can well remember the time when a stand camera was the *sine qua non* for worthwhile photography and no serious worker could stand for anything smaller than a whole-plate ($6\frac{1}{2} \times 8\frac{1}{2}$) without losing a certain amount of prestige among his fellow workers. Nowadays there are few amateurs who would carry such a bulky equipment on a day's tramp through the field. Are the amateur photographers of today less enthusiastic than those of twenty or thirty years ago, or is it because of the belief that anything which can be done with the bulky stand camera can be done equally well, and with less inconvenience, with a small hand camera?

The relative merits of the hand and stand camera have been discussed numberless times, generally to the disadvantage of the stand instrument. Nevertheless, we are inclined to believe that the cumbersome nature and inconvenience of the stand camera is a blessing in disguise. With a hand camera the temptation to shoot right and left at every appealing subject, without a great deal of consideration, is hard to resist, whereas, when using a stand camera, the tendency is to carefully study the means for making the best of every subject so as to receive compensation for the labor involved in setting up the camera. The stand camera requires more time to set up, focus and make an exposure and this gives the photographer time to study the composition and lighting of the subject, the effectiveness of the viewpoint and the time of exposure. One can easily observe on the ground-glass what should be obtained from the subject. It need hardly be said that this is quite different from the use of a hand camera with a finder. With the latter we are confined to the small image in the finder, which only approximately indicates the boundaries of the view and is so small that effective study of the arrangement of the subject is practically impossible. The iconometer finder is better, but this fails to show the effect obtained by focusing on different planes, or the use of various apertures. The reflex will, of course, show all of these things and it is for this reason that the reflex is, next to stand camera, the best instrument for pictorial work.

*

A WIDE-ANGLE TIP

Quite often, when photographing in a confined situation, it is desirable to include slightly more of the subject than the lens fitted to the camera will normally include. For those who, for any reason, do not have a wide-angle lens with them, the following tip may be of considerable assistance, provided the angle which must be included is not too large. Stop the lens down to the smallest opening, cover the head with the focusing cloth and wait for a short while for the eyes to become accustomed to the dull image on the ground-glass. As soon as the details of the image can be readily observed, rack the lens as far back towards the ground-glass as is possible without noticeable loss of definition. This will slightly increase the angle of view, which may be just enough to meet the requirement of a subject, which only demands a slightly greater angle than that given by the lens as ordinarily used.

TECHNICAL & SCIENTIFIC NOTES

THE ACID-FIXING BATH

"Hypo," or as it is named by the chemist, sodium thiosulphate, remains the only practical agent for fixation of the photographic image, notwithstanding the elaborate researches made to find a substitute. It not only accomplishes the desired end more effectively than any other known agent, but has the added virtue of cheapness.

However, no other agent used in photography is more abused, none blamed more for imagined cause of numerous evils. Somehow or other, very early in the history of photographic practice, sulphur was looked at suspiciously as an inimical agent, subtle in its attacks and potent in deterioration of photographic products.

Why sulphur was selected as "the goat," it is hard to say. But the mere fact that this hypo contains sulphur, in its constitution, was enough to put suspicion upon it for evil doing. The accusation was unfounded. It has never been shown that sulphur is the responsible agent for the ills of photography. As a matter of fact, sulphur is more a friend than enemy of the photographer, and the probabilities are that the silver sulphide is a very stable body.

Anyhow, hypo is the ideal fixer, and on general principles, the use of plain hypo is attended with no risk, otherwise than those due entirely to careless manipulation or improper application of this agent; and we are inclined to say, too, that the addition to the hypo bath of the various substances, suggested to increase its efficiency, or to obviate its supposed idiosyncrasies, or imagined evil inclinations, may be responsible for the obliquy hypo has been unfairly subjected to.

The one time prevalent practice of thoroughly washing after development is not generally, nowadays, observed, with the result that a small quantity of the developing solution remains in the film and is transferred to the fixing bath, which becomes discolored by oxidation from the air.

A discolored fixing bath is liable to discolor the plate or paper, and as it is found that acidity of the bath tends to discharge this stain, the suggestion is given that it may be well to directly add an acid to the hypo bath as a preventive. It is usually established that, with content of acid in the fixing, the stain is not perceptible in the film, but does it prove that the cause of the stain has been eliminated? May not some subsequent action upon the film restore the stain which was only disguised? There is considerable difference between getting rid of a color presentation and getting rid of the prime cause of the color.

So, if at any time discoloration should loom up, is it scientific to lay the cause to the charge of sulphur? But the more rational conclusion would be that the stain is due to decomposition set up in the fixer by the additions to the hypo itself, which possibly may hurt its integrity.

This looks like an arraignment of the acid-fixing bath. Let us first note the general composition of the "Acid-fixing Bath." Its constituents are:

1—Hypo (sodium thiosulphate)
2—Acid
3—Sulphite
4—Alum

These four are dissolved in water as the vehicle. What is the alleged function of each? Hypo is the fixing agent proper. It will completely effect the solution of the silver halide in the film.

The acid (sulphurous, or some organic acid, like citric, for instance) is the clearing agent, which also promotes swelling of the gelatine film, and may possibly accelerate the fixation, reduce the risk of stain, or temporarily obliterate it, and perhaps, may have some regulating influence on the hardening agent.

The sulphite (sodium sulphite, sodium bi-sulphite or meta-bi-sulphite), supposed to protect the hypo from decomposition (the precipitation of sulphur which the acid

causes), also acting as a preservative against oxidation by the absorption of oxygen from the air, etc.

Alum—hardener of the gelatine, preventive of frill or softening of the film. The chemical action, therefore, taking place in this bath, is necessarily considerable, and there are formed complexes which occupy the attention of the chemist to distraction. These "complexity-constants," as they are called, have been the subject of much experimentation.

The rate of fixation is, however, greatly influenced, as Sheppard and Mees have shown in their investigations, by other considerations than the conditions of chemical equilibrium. It was shown that for relatively dilute solutions of hypo, up to 5 per cent., the rate of fixation is directly proportional to the concentration of the hypo. and the speed of fixation is dependent upon agitation of the solution (stirring up). It follows from these results that the speed of fixation is primarily determined by the rate of interchange of the soluble components between the film and the solution. Increase of temperature has a double influence, accelerating the rate of diffusion and increasing the swelling up of the gelatine.

The time of fixation is mainly determined by the reaction time of the lowest layer adjacent to the support (glass, paper, film). Not only does the thickness of the film play a part, but the position of the plate in the solution. Hence, the difference in time of fixation between plates fixed at rest in a horizontal position and placed flat, and according as the gelatine emulsion side is uppermost or downward.

The acid-fixing bath was introduced in 1889 by Lainer, chiefly for preventive of stain. He found that the milkiness of the bath (the deposition into colloidal sulphur from action of the acid on the hypo) could be prevented by combining the acid with sodium sulphite or bi-sulphite before adding it to the hypo.

The alum was subsequently employed to harden the film. From this brief outline of the nature of the acid-fixing bath, we may conclude that the plate must be subjected to a sort of torment from the complications set up by the constituents. There are combinations formed which the chemists acknowledge are hard to follow, and the natural inference is that it is not safe or wise to subject a plate to such an ordeal. Hypo, unaided, accomplishes the desired end. Why hamper its integrity?

We have, in practice, invariably followed the suggestion of Chapman Jones for over twenty years, and can assure you that negatives fixed according to his instructions, made a couple of decades back, show no evidence of deterioration and are practically as useful as on their primal day.

Chapman Jones recommended an alkaline hypo bath where the alkali is negatived, to prevent the discoloration of the hypo, it should contain sulphite, the very agent used to prevent discoloration of the developer during development.

There may be exceptional cases when it is advisable, or perhaps necessary, to employ the acid-fixing bath, as, for instance, in the use of films which have incorporated some dye material to make them specially sensitive to certain colors, but for general practice it is safer to use a plain hypo bath, and, if needed, to harden the film after fixation.

❧

WHAT AFFECTS THE TONING?

What is the nature of the toning process? In other words, what causes the change of tone (color) of the positive image, when subjected to the influence or action of certain chemical or physical agents?

The writer is going to venture an explanation, which may be incorrect. He offers a physical reason, instead of the accepted chemical reason. He is willing to risk the expected obloquy in the conviction that theorizing does no particular hurt, when not insistent for its validity; and, moreover, it may be provocative of good in exciting argument for confutation by those better informed than the proponent, thereby contributing information relative to the subject, which may compensate the victim for the immolation suffered, in his realization that some good is done. Early in the history of photographic printing, efforts were made to change the tone (the color) of the positive image of the print. The reddish-brown color (foxy tone) was not relished by artistic taste.

The basis of the untoned image is silver, in some form of reduction, and this particular color is due (so it is claimed) to the fine state of the deposit of the metal and it was presumed that the toning was the result of another molecular aggregation which differently reflected light, but the theory maintains that a chemical change occasioned this molecular transformation. Toning was attributed to a depositing upon the printed image wherever silver is present of a finely precipitated powder of

reduced gold, or of some other metal used in toning.

The toning bath contains a neutral solution of auric chloride as its active agent, but the gold salt is generally supplied in the form of the double salt of gold and sodium:

$$Na, Au Cl_4 + 2 H_2O,$$

obtained by evaporating a solution of common salt and auric chloride to the crystallizing point. This double salt has the advantage of not being deliquescent and is also neutral.

With respect to the chemistry of the toning process, let me give Meldola's theory (Chemistry of Photography). He sees no mystification in the process:

"A film composed of the reduction products of silver chloride and silver albumenate, together with unaltered silver chloride and albumenate, is immersed in a solution of auric chloride (chloride of gold).

"It is essential, for good result, that the toning bath should be neutral, and so the gold salt is accordingly mixed with such substances as chalk, borax, sodium carbonate, phosphate or acetate. Now, it is well known that gold salts are most readily reducible, almost any reducing agent, organic or inorganic, precipitates gold from a solution of auric chloride. The toning solution may, therefore, be looked upon as containing potentially a deposit of metallic gold, ready to be precipitated upon any reducing surface bathed by it, just in the same way that the acid developing solution may be regarded as containing a potential deposit of metallic silver.

"The reduction products of the silver chloride and albumenate, forming the deposit image, act as reducing agents and thus become covered with the deposit of gold, which imparts the tone to the print. The unchanged silver chloride and albumenate cause no reduction, and therefore receive no deposit.

"The color of finely divided gold, precipitated by reduction from a solution of one of its salts, depends very much upon the state of concentration of the solution and the rate at which it is deposited. This is an observation due to Faraday. If the deposition takes place very slowly, we get a red form of gold, if it takes place more rapidly, the fine gold particles appear blue, due to difference in molecular structure (or aggregation). Now the reduction product of silver is naturally red, and so the blue form of gold makes the desired tone."

It seems, therefore, that Meldola, although he refers incidentally to Faraday's experiments on the physical phenomena of tenuous gold films, with respect to transmitted light, accounts toning a chemical phenomenon.

But I may be mistaken in my inference.

However, let us give briefly some of the results Faraday speaks of in his paper, published in the Philosophical Transactions of the Royal Society in 1857. His paper is a long one and might profitably be referred to, not only in this connection, but also relative to color photography directly. But this for another time. This suggestion is here made merely because the writer's experiments in producing natural colored images by diffraction, interference, in tenuous colloidal metal, though not remarkable, nevertheless demonstrate the possibility of something better by experimenters better equipped. Faraday's paper, "On Relations of Gold (and other metals) to Light," read at the Royal Society, February 5, 1857, occupies some forty-five pages, and so only can be touched upon here in relation to toning.

By different methods, physical and chemical, Faraday reduces the metals experimented with to the condition of great tenuity, which he thinks may appropriately be called metallic fluids, but our present information, relative to the subject of solubility, which Faraday was not in possession of, inclines us to the conviction that he had produced the colloidal state of the metals. The films were obtained very uniform and of varying thinness, from almost perfect transparency to opacity, which could be superimposed on glass plates with great facility. They may be obtained of such tenuity as to present no metallic appearance, all the colored rays of light being transmitted. The transmitted color is dependent upon the thickness of the film.

The best results seem to have been had with the reduction of the gold by means of phosphorus. A gradual change goes on amongst the particles, suspended in the solution, especially where the content of the gold is appreciable.

Fluids at first clear to ordinary observation, become turbid, if they are left to stand for a short time and a deposit falls. If the supernatant fluid be separated and left to stand, another deposit may be obtained. Even after the fluid is allowed to stand for months, at equable temperature, the coloring particles appear like floating clouds. The molecules of the gold seem of

large dimension. Considering the fluids as owning their properties to extreme diffusion of particles, it may be observed that many of them with certain gold content which transmit an amethystine light and send forth a ruby light when the quantity of gold is increased.

Elevation of temperature has effect upon these fluids, the ruby passing to amethystine, then to blue.

"In preparing some of the fluids," Faraday remarks, "I made the solution hot before adding the phosphorus, and when sulphide of carbon was used to dissolve the phosphorus, the gold showed in a flocculent mass."

These excerpts from Faraday's paper are sufficient to explain the notion that the gold in the toning process is gold in a colloidal state. May not, therefore, the image in the reduced silver in the print have alteration of color (tone) due to transmission of rays through the superposed tenuous film of colloidal gold?

DEVELOPERS FOR THE BROMOIL PRINT

In *Il Progresso Fotografico* Dr. R. Namias strongly advises for the development of the bromide print to be used as the base of a pigmented bromoil the following caustic hydrochinone developer of Wratten:

A. Hydrochinone	25	grams
Potassium metabisulphite	25	grams
Water	1,000	ccs.
Potassium bromide	25	grams
B. Potassium hydrate	50	grams
Water	1,000	ccs.

For use take equal parts.

With this developer an image of remarkable vigor and richness is obtained. The blacks of the image are fully developed and the action on the gelatine is such that when the operation of bleaching is complete and pigmenting is begun, the ink adheres readily and many of the difficulties of pigmenting are eliminated. After the development of a number of prints, this property of the developer is, to a certain extent, lost and the images are not of good contrast or relief. Therefore, the developer should only be used for a limited number of prints and should not be used after standing for a considerable time.

The following diamidophenol-metol developer is also highly recommended by Dr. Namias:

Diamidophenol hydrochloride	5	grams
Metol	1	gram
Sodium sulphite (dry)	0.15	gram
Potassium bromide	0.50	gram
Water	1,000	ccs.

The oxidation product of this developer does not tend to make the gelatine insoluble and it is superior to metol-hydrochinone for the development of the bromide print for bromoil. The depth of the blacks is not so great as with the caustic hydrochinone developer and this formula is more suitable for vigorous negatives from which softer prints are desired.

ON THE DURATION OF FIXING OF DEVELOPMENT PAPERS

LUMIERE AND SEYEWETZ

No means have been available until now for determining with precision the times necessary for the fixing of development papers, nor the influence exercised by certain factors (such as the concentration of the fixing bath, the influence of temperature, the addition of sodium sulphite and of chrome alum) on the duration of the operation.

A simple means of determination exists in the case of plates, because when fixing is almost complete, the film is practically transparent; it is not the same with papers, however, for in this case the opacity prevents such examination. We have examined a simple reaction which indicates the traces of silver salt in the paper and thus recognizing the completion of fixing. We have established undeniably that the formation of silver sulphide by the action of an alkaline sulphide indicates the presence of undissolved silver halide in the film.

Mode of Operation

We have adopted the following method for determining the time necessary for fixing:

A sheet of paper 13 x 18 cm. is cut into six equal bands, which are immersed for varying times in 100 ccs. of sodium thiosulphate (hypo) in order to study the reaction to sulphide. To this end, each band, on removal from the fixing bath, is washed in running water for two minutes, after which it is treated with a 5 per cent solution of sodium sulphide, which immediately turns brown any undissolved silver bromide, thus indicating imperfect fixation. If the band is not colored after this treatment, it

may be considered completely fixed. In confirmation of this point one of these strips was well washed to remove the sodium thiosulphate and exposed to light after drying. No change could be observed, hence it may be assumed that fixation is complete.

The investigations have been conducted with ordinary semi-brilliant Lumière bromide paper, at a temperature of 18 to 20 degrees Centigrade (65-68 degrees Fahr.), using 100 ccs. of a 20 per cent bath of sodium thiosulphate for each sheet of paper 13 x 18 cm., each of the six bands into which the sheet is divided being well drained, upon removal from the bath, in order to prevent loss of the same.

These operations are continued until the quantity of fixing solution which remains is insufficient to completely cover the paper. On the average this limit is reached with the twentieth sheet. The volume is then reduced to about 45 ccs.

On repeating these investigations with developed prints which have been rinsed and drained before being placed in the fixing bath, in order to determine if the dilution lengthens the duration of fixing, we find that the final volume of bath after fixing twenty prints in 100 ccs. of solution is sensibly the same as the initial volume. The strength of the used bath of sodium thiosulphate is but little reduced after the twentieth print.

A. Employment of Sodium Thiosulphate

Influence of the Concentration

We have determined the duration of fixing for various concentrations of sodium thiosulphate at the same temperature employing solutions of 7, 10, 20 and 40 per cent concentration.

The results of these investigations are represented by the curves of figure 1.

These studies show that the rate of fixing is practically identical with 10 and 20 per cent concentrations of sodium thiosulphate. It is a little slower with a 7 per cent solution and considerably less with a concentration of more than 20 per cent.

In fact, when a solution of sodium thiosulphate of 30 per cent is employed the duration of fixing is about 2.5 times longer than for a solution of 20 per cent concentration and this is increased to 4 times if the strength of the solution attains 40 per cent.

Note.—When the bath of sodium thiosulphate has fixed a certain number of papers,

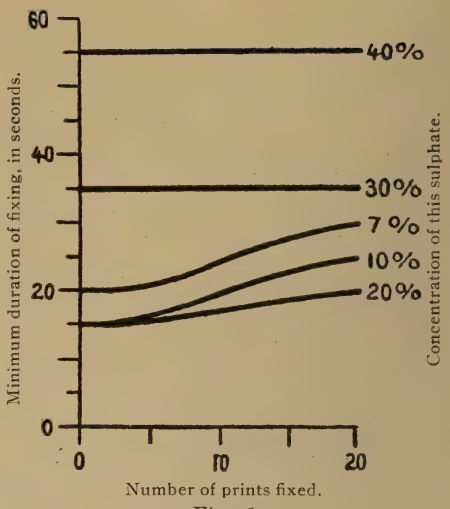


Fig. 1

the measure to which it is enriched by silver haloid salts is made apparent by treatment with alkaline sulphur. A yellowish coloration is slightly perceptible after the addition of the first print and slowly becomes stronger in proportion to the increase in the number of prints. This coloration which appears after the fixing of a large number of prints is greater with concentrated solutions and corresponds to the presence of dissolved silver haloid.

Influence of Temperature

These investigations are analogous to those recorded above, which were made with a 20 per cent solution of sodium thiosulphate, at a temperature of 18-20 degrees Centigrade, but are for temperatures of 10 and 30 degrees Centigrade.

The results of these investigations are represented in figure 2.

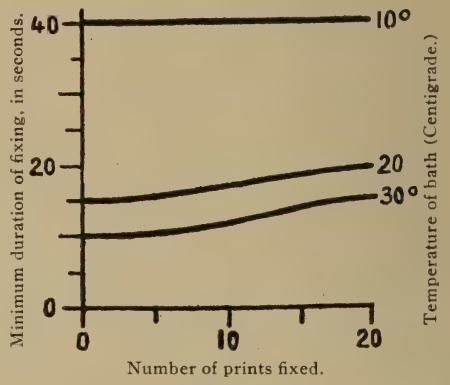


Fig. 2

The curves show that with a 20 per cent solution of sodium thiosulphate the duration of fixing is about three times longer at 10 degrees Centigrade (50 degrees Fahr.) than at 20 degrees (68 degrees Fahr.), but is only slightly less at 30 degrees (86 degrees Fahr.) than at 20 degrees.

Influence of Sodium Bisulphite and Chrome Alum

When the usual amount of sodium bisulphite (20 ccs. of the commercial 40 per cent bisulphite) is added to a liter of a 20 per cent solution of sodium thiosulphate, the duration of fixing is a little more than doubled.

If 7.5 grams of neutralized chrome alum are added to each liter, the mixture of bisulphite and alum fixes about as rapidly as the bisulphite alone. The duration of fixing, however, is a little less if the chrome alum is used alone without sodium bisulphite.

Influence of the Nature of the Emulsion

We have repeated our investigations on the duration of fixing in 20 per cent solutions of sodium thiosulphate, using the following bromide papers of commerce having notable differences in the emulsions:

Lumière Papers—
- Ordinary brilliant bromide.
- Semi-brilliant contrast bromide.
- Bromide for enlargement.
- Rhoda.

Eastman Papers—
- Velour bromide.

Gevaert Papers—
- Vittex.

The duration of fixing of these diverse papers in the bath containing sodium bisulphite is practically the same as for the ordinary semi-brilliant Lumière bromide paper.

B. Employment of Mixtures of Sodium Thiosulphate and Ammonium Chloride (Ammonium Hyposulphate)

We have examined the addition of ammonium chloride to the sodium thiosulphate solution to determine if fixation is accelerated in the same manner as with plates.

It will be recalled that if we add to a solution of 15 per cent sodium thiosulphate one-fourth of its amount of ammonium chloride, the rate of fixation attains a maximum rapidity (the duration being reduced by two-thirds), while when the strength of the thiosulphate solution attains 40 per cent the duration of fixing is notably lessened by the addition of ammonium chloride.

In the case of papers, if we vary either the standard of the fixing bath or the proportion of ammonium chloride, no diminution in the duration of fixing is observed.

On the contrary, the time required is augmented in proportion to the increase in the proportion of ammonium chloride.

Conclusions

1. Generally the minimum time which should be adopted for fixing one sheet of 13 x 18 cm. bromide paper in 100 ccs. of a 20 per cent solution of sodium thiosulphate at a temperature of 18-20 degrees Centigrade (65-68 degrees Fahr.) is from 15-20 seconds.

2. The addition of quantities of sodium bisulphite alone or in combination with chrome alum double the times necessary for fixing with a plain fixing bath.

3. In fixing a series of prints in the same bath, the duration of fixing is but slightly lengthened down to the twentieth print, which represents the limit of the fixing power under the above conditions.

4. Reduction of the concentration of the bath of sodium thiosulphate from 20 to 7 per cent has but little effect on the duration of fixing. On the contrary, it is increased considerably with a concentration of 20-40 per cent.

5. Within the limits which we have investigated, the duration of fixing is inversely proportional to the temperature. At 30 degrees (86 degrees Fahr.) it is 4 times as great as at 10 degrees (50 degrees Fahr.).

6. The addition of ammonium chloride to the solution of sodium thiosulphate does not accelerate the rate of fixing as in the case of plates.

Practically in employing a 20 per cent solution of sodium thiosulphate containing 20 ccs. per liter of commercial sodium bisulphite with or without chrome alum, at a temperature of 18-20 degrees Centigrade, the total amount of silver halide is certain to be removed after an immersion of three minutes, within the useful life of the bath. —*La Revue Française de Photographie.*

[We think that it is well to sound a note of warning to those who may be inclined to adopt, for practical work, the times of fixing indicated as sufficient by the investigations of Lumière and Seyewetz. It must be remembered that the conditions under which these investigations were conducted differ greatly from those employed in practical work. In the above investigations each 13 x 18 cm. print was fixed in a sep-

arate 100 ccs. of fresh fixing bath, while in ordinary practice a considerable number of prints are added to the bath, where they are allowed to remain with intermittent stirring. It is evident that under such circumstances the duration of fixing will be considerably longer than when one print is exposed to the entire volume of solution, owing to the adhesion of the prints to each other, so that the fixing solution does not have complete access to the surface of the prints. While the times of fixing indicated may be adopted, under the conditions indicated, for a few rush prints for press or other work, it certainly should not be applied to the mass fixing of prints as conducted in the majority of professional studios or finishing plants.—Ed. THE CAMERA.]

A NEW M-Q FORMULA FOR USE WITH PHENOSAFRANINE

In *Il Progresso Fotografico,* Dr. R. Namias gives a new metol-hydrochinone formula for use with phenosafranine, which, it is claimed, represents an improvement in several directions over the earlier formulas.

With these there was danger of fog, with ultra-sensitive plates, while the mixed solution would not keep well. The fog was found to be due to an insufficient amount of sodium sulphite, which produced the well-known "sulphite fog." It was found, however, that increasing the amount of sodium sulphite in order to overcome this tendency was inadvisable, as the solution then gave strong dichloric fog. However, by replacing the sodium sulphite with potassium metabisulphite, it was found that both of these defects might be overcome at one and the same time. The addition of this substance converts the developing solution into a slightly acid condition, owing to the liberation of sulphurous acid by the potassium metabisulphite when in solution. This acid condition assists in the preservation of the solution and fulfills the function of the sulphite without danger of either sulphite or dichloric fog. The new formula of Dr. Namias is as follows:

A.	Metol	1 gram
	Hydrochinone	6 grams
	Potassium metabisulphite	25 grams
	Potassium bromide	3 grams
	Water	500 ccs.
B.	Potassium carbonate	100 grams
	Water	500 ccs.

For use take equal parts.

The A solution should not be mixed in very warm water or the preservative properties of the metabisulphite will to a large extent be lost.

A further improvement in this formula is that there is no tendency to cause the precipitation of the phenosafranine and thus produce irregular development. This serious disadvantage of the older formula is almost completely overcome in this later one.

THE FIRST ANASTIGMAT

As the historian of the photographic lens, Professor Moritz von Rohr is easily the outstanding authority of the world. He has been able to trace back to 1866 Piazzi Smyth's combination of the Petzval portrait lens with a plano-concave. This gave correction of the oblique rays over a flat field. In 1874 Piazzi Smyth published an article in which he looked forward to "instantaneous photography on flat plates with definition, detail and development so good over their whole surfaces as to allow either the entire picture or any special part of the same to be magnified in the copying camera to ten or twenty times the size of the original negative, either for lantern exhibition or paper publication." The more one studies the minds of the early photographic experimentalists the more one is impressed with the fact that they correctly predicted the conditions for success. But productive science had not provided them with the material for carrying their ideas into effect.

For getting the best results from under-exposure "Thermit," in the *B. J.,* advocates the following amidol developer:

Sodium sulphite (dry)	175 grains
Amidol	30 grains
Water	10 ounces

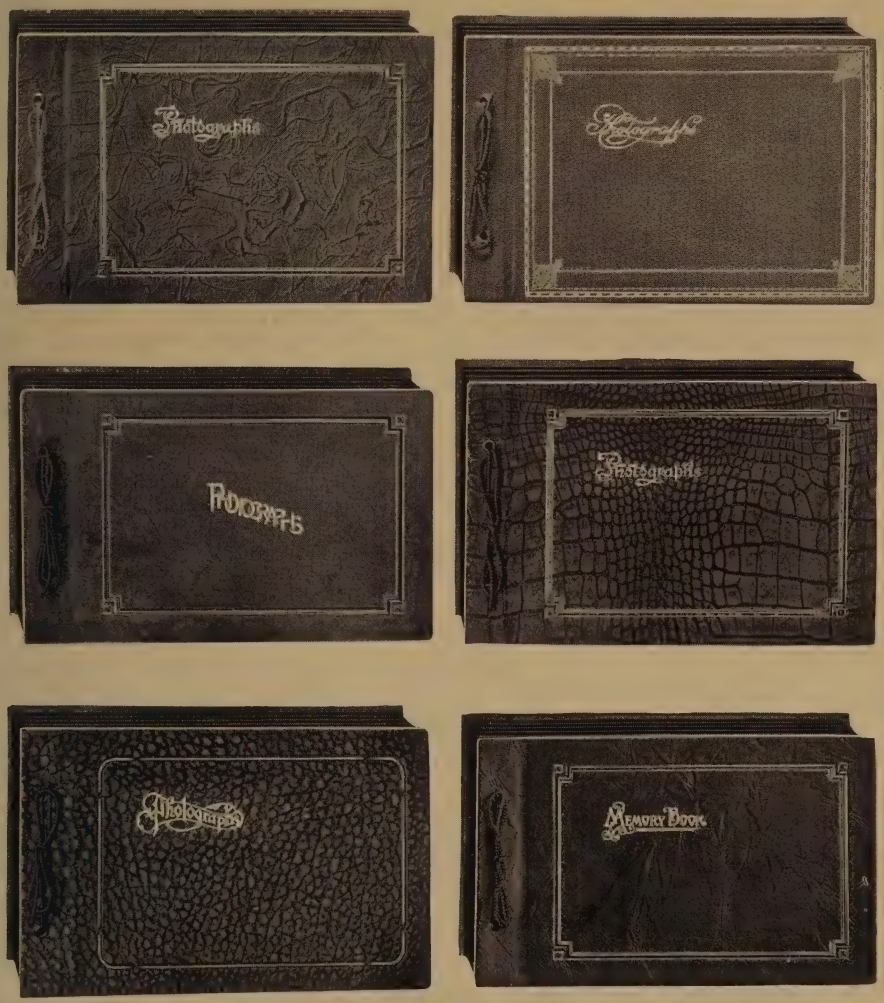
This is used at a temperature of 70 degrees. The addition of a little bromide may be necessary with certain makes of ultra-rapid plates. The advantage in the use of amidol is that owing to the absence of alkali the developer can be used much warmer than is possible in an alkaline developer, which tends to produce frilling of the gelatine. The advantages of using the developing solution at a higher temperature in the case of under-exposures are well known, and is extensively used by newspaper photographers, who must get the best possible result from considerable under-exposure.

Children grow up—make a baby book from Royal Albums

ROYAL ALBUMS

The standard for over a quarter century

Made in 38 series of various leathers, artificial leathers and art cloths



What is more interesting than the family photographs—put them in a Royal Album

A memory book carries pleasant recollections—make it with a Royal Album

FARRON S. BETTS

Maker of Albums Exclusively

Office and Factory, 88 Thirty-Fifth Street, Bush Terminal

BROOKLYN, N. Y.

Chicago Display Room :

GEO. W. MACKNESS CO., 180 N. Wabash Avenue

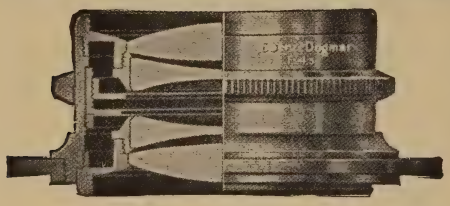
Ask your dealer for the Royal Albums

Please mention "The Camera" when Corresponding with Advertisers

AMATEUR FINISHERS
ATTENTION!!

MOST COMPLETE CATALOGUE OF AMATEUR FINISHING APPARATUS AND SUPPLIES
READY FOR FREE DISTRIBUTION ON OR ABOUT MARCH 15th.
SEND US A CARD FOR YOUR COPY.

G. GENNERT, INC.
24 EAST 13TH STREET
CHICAGO NEW YORK LOS ANGELES



DOGMAR
FOR
Reflecting Cameras
SPEED *f*4.5

*f*4.5		
000*a*	3	1¾x2⅜
00	4	2½x3½
0	5	3¼x4¼
1	6	3½x4¾
1*a*	6½	4x5
2	7	4x6
2*a*	7½	4½x6½
3	8¼	5x7
4	9½	5x8
5	10¾	6½x8½
6	12	7x9
*f*5.5		
6*a*	12	7x9
7	14	8x10
7*a*	16½	10x12
8	19	11x14

Dogmar *f*4.5 is suitable for all kinds of speed work. It has two single combinations, different in focal length. These can be used separately at moderate stops.

The back lens gives one and one-half times the image size of the complete lens. The front lens gives a double-size image. The scope of the camera is greatly increased. Because of its wonderful corrections, Dogmar, even when wide open, affords images of sparkling brilliancy.

In asking for Dogmar information, give the name and the size of your camera. Have you seen the Goerz camera booklet? This is sent free on request.

C. P. GOERZ AMERICAN OPTICAL COMPANY
319 East 34th Street - - New York City

GOERZ
LENSES AND CAMERAS

Pleasing Photographs of Your Children are easily obtained with

REMOVE COVER BEFORE FIRING
SIX Actino No. 12
FLASH LIGHT CARTRIDGES
For Producing Fully Timed Negatives
JAS. H. SMITH & SONS CO.
3541 COTTAGE GROVE AVENUE. CHICAGO
RAPID POWERFUL
6 FLASH CARTRIDGES

ACTINO FLASH-CARTRIDGES

These burn rapidly enough to prevent subjects from moving *during exposure*. Actinos are most convenient to use, and are of such high quality that successful results are certain.

Your dealer has them and our free instructive booklet

"Flashlight Photography"

J. H. SMITH & SONS COMPANY, 3543 Cottage Grove Ave., Chicago, Ill.

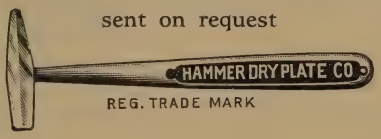
Ica Diaphot

When the Diaphot reads "*f*8, 1-50th of a second," you may depend upon it. On a cloudy afternoon, if it reads ½ second at *f*8 or U. S. 4, believe it, for the Diaphot is as truthful as it is simple. It doesn't take thirty seconds for the Diaphot to indicate the correct exposure. It's beautifully made, and with a neat leather purse, sells for $1.75 at all camera shops.

HAROLD M. BENNETT, *U. S. Agent*, 153 W. 23rd St., New York

HAMMER PLATES excel in speed, color-range and reliability. They are coated on clear transparent glass and meet all demands of climate and temperature.

Hammer's Booklet, 10th Edition, sent on request



HAMMER DRY PLATE COMPANY

Ohio Avenue and Miami Street, St. Louis, Mo.
New York Depot, 159 W. 22d Street, New York City

TRADE B&J MARK PHOTO SUPPLIES

Announcement REXO

We have reorganized and removed to new quarters where we will continue to serve the photographic trade the same as for the past thirty years.

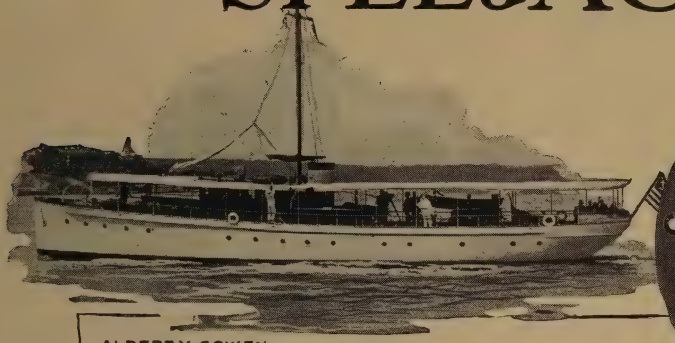
BURKE & JAMES, 425 S. Wabash Ave., Chicago, Illinois

Manufacturers and Jobbers

Send ten cents for our beautiful 200-page general catalogue

HALOID HALOID RITO HALOID RITO HALOID RITO

Around the world in the "SPEEJACKS"



ALBERT Y. GOWEN
LEADER NEWS BUILDING
CLEVELAND, OHIO

Dear Mr Bennett:

I wish to thank you for your letter of the 27th. It is quite true that this is the Carl Zeiss Binocular which I used on the "Speejacks" during our trip around the world, and it is certainly a wonderful glass. Tho it has been subjected to very severe weather and has been in almost daily use, it is practically as good as when I purchased it nearly two years ago.

We used a great many Carl Zeiss instruments during our trip, including seven or eight Carl Zeiss Tessar lenses in our motion picture work; also some Zeiss lenses for still photography. Mr. I. J. Ingraham who took all of the motion pictures, agrees with me that a large percentage of our success in getting good pictures in the Tropics was due to our lenses. These pictures will be shown throughout the country as a Paramount Picture, titled "Around the World in the Speejacks" and I trust you will have the opportunity of seeing them.

Yours very truly

When results count, when the nature of the work demands not only good lenses but the best that money can buy, Carl Zeiss lenses are invariably selected.

HAROLD M. BENNETT, U. S. AGENT, 153 West 23rd Street, New York

"Spring Is Here"

TAKEN ON

Agfa

ROLL-FILM FILM-PACK

Load your camera with this famous film —a trial will convince you of its superiority in *clearness* and *speed*

Ask for AGFA FILMS at your dealers.

Agfa Products, Inc.
114 East 13th St. New York

Taken by S. G. Kirtland with Tessar Ic, No. 15

THE combination of needlepoint definition with astonishing speed and even illumination over the entire plate has made the Tessar Ic, *f* 4:5 a favorite lens with both professional and amateur photographers to "arrest" motion.

For your outdoor pictures this summer, equip your camera with a

Bausch & Lomb
TESSAR Ic

Bausch & Lomb Optical Co.
Desk E 80, 635 St. Paul Street, Rochester, N. Y.
New York Washington Chicago San Francisco London

YOUR OWN MOTION PICTURES

AT THE TOUCH OF A BUTTON

Filmo REGISTERED

AUTOMATIC CINÉ-CAMERA

"What you see you get"

What You See You Get

and perpetuate for yourself and friends.

As Conveniently and Quickly

handled as a binocular.

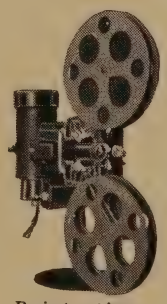
Fits the Corner of Your Bag

or suitcase; a delightful companion on your trip or vacation.

Weighs Only 4½ Pounds

It is fully automatic; requires no tripod; loads in daylight; capacity, 100 feet 16 mm. Eastman Ciné Film (equivalent 250 feet Standard Film). The operating cost is about ⅙th that of a standard camera. Film cost is astonishingly low and includes development and finishing ready to project on the Filmo Automatic Ciné-Projector.

Filmo REGISTERED **AUTOMATIC CINÉ-PROJECTOR**



Projects a picture of unequaled quality and brilliancy

Weighs only 9 pounds; the smallest yet finest motion picture projector ever made. Capacity, 1000 picture feet, giving about 16 minutes of screen time. Accommodates all 16 mm. films including thousands of subjects of every description. Feature plays with well-known movie stars, comedies, travel, educational, etc., are now available for rental at nominal rates.

The Filmo Automatic Ciné-Camera and Ciné-Projector embody the same quality of design and workmanship as Bell & Howell Standard Professional Motion Picture equipment, which is used exclusively by the foremost producers throughout the world.

Camera and Projector, $360.00 or sold separately. Ask your dealer or write for catalog. Both instruments on display at our branches. Immediate deliveries.

BELL & HOWELL COMPANY

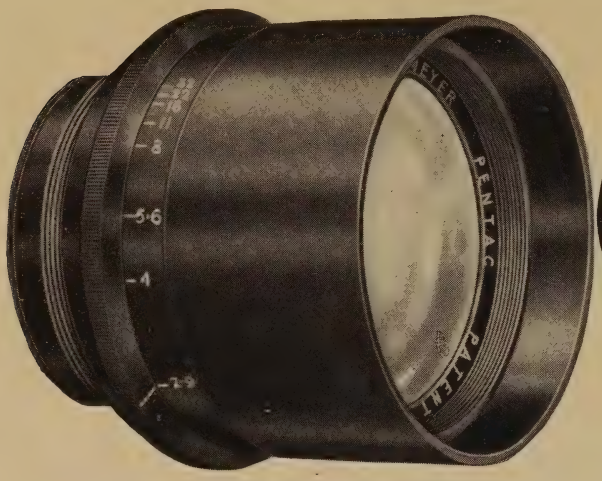
BRANCH:
220 West 42nd Street
New York, N. Y.

Larchmont and W. Ravenswood Avenue
CHICAGO

BRANCH:
6324 Santa Monica Blvd.
Hollywood, Calif.

The Dallmeyer Pentac
f.1.9 to f.2.9

is the fastest lens in the world and there is a Dallmeyer pre-eminent for every need—soft focus; portrait; telephoto and process.



CABLE ADDRESS "MARJON" WESTERN UNION CODE

MARTIN JOHNSON
BOX 3A. NAIROBI
BRITISH EAST AFRICA

Herbert and Huesgen,
18 East 42nd Street,
New York City.
U. S. A.

London, England.

December 28th, 1923.

Dear Friends:-

Now that all of my lences have been fitted to my seven still cameras and my eight movie cameras by Dallmeyer, I felt it was up to me to write and tell you how well pleased I am.

As you know I discarded fourteen good lenses for Dallmeyer lenses, as my last work in Africa proved to me that they are the best in the world, and I say this after trying every well-known lens during the past seventeen years.

It will be about six months from this date before I can send you pictures showing the results. However, I am sailing with the utmost confidence that I will get the most wonderful pictures of their kind that have ever been made.

Most sincerely yours

Martin Johnson.

Mr. Martin Johnson, noted explorer and motion picture photographer, who with Mrs. Johnson has brought from African wilds some of the most thrilling wild animal films ever taken.

Evidence!

Read why Martin Johnson is using only Dallmeyer Lenses on his latest expedition.

Herbert & Huesgen Co. 18 East 42nd St. Inc.
New York City Sole Agents for U. S. A.

A LENS FOR EVERY PHOTOGRAPHIC PURPOSE

THE WORLD'S FINEST CAMERA IS THE ERNEMANN

ERNEMANN
SPORTSMAN
CAMERAS

focal *plane*

THE Ernemann Sportsman Camera is a product of 35 years' experimentation in designing an instrument that would meet every need of the Sportsman, however exacting.

It is the most compact camera yet designed, the most efficient in shutter and lens equipment.

Precision workmanship, materials and equipment of unvarying first quality, as well as a price in keeping with lifetime service make Ernemann instruments appreciated by those who desire the best.

The Ernemann Sportsman Camera is held to the eye—with resulting picture as the eye sees. It is equipped with Carl Zeiss or Ernemann Ernotar f.3.5. or f.4.5. anastigmat lenses, capable of correct exposures in unfavorable lights, and of a brilliance of definition that holds through enlargements to almost any size. Most of all, the Sportsman features the Ernemann focal plane shutter, with its self-capping safety device and its 20 speeds up to 1/1000 of a second adjusted through one single turn of a knob—the most efficient shutter yet constructed.

Whatever your photographic requirement, send for booklet descriptive of the new Erneman Sportsman Camera. It may be just the camera you have long awaited.

Herbert & Huesgen Co. 18 East 42nd St. Inc.

New York City

SOLE AGENTS FOR UNITED STATES OF AMERICA

" HIS SON "

Taken by Fellowcraft Studio, Albany, N. Y., with 8x10 ILEX PARAGON Anastigmat f4.5 Lens.

PORTRAITURE

An **ILEX PARAGON** Attribute—

But one of many.

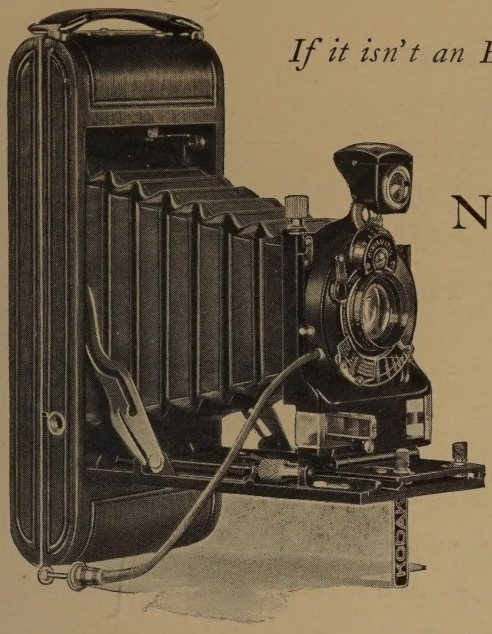
Equally effectual for action pictures; commercial work; groups; landscapes and view; aerial photography.

ILEX OPTICAL COMPANY

ROCHESTER, N. Y.

Pioneers in the successful making and marketing of shutters with the revolutionizing wheel retarder

If it isn't an Eastman, it isn't a Kodak



No. 1A Autographic

KODAK

Special

Pictures 2½ x 4¼
Price, $60.00

The sharp-cutting Kodak Anastigmat *f.* 6.3 lens enables you to handle difficult pictures with a confidence that this fast lens rightly inspires.

And the Eastman-made Kodamatic shutter, with speeds from 1/200 to 1/2 second, including time and "bulb" actions, assures dependably accurate exposures.

Other refinements include an automatic scale which gives, at a glance, the correct exposure with each lens opening; and the Kodak Range Finder, another aid to better pictures, which finds the focus for you.

Every feature of this instrument makes it *Special* and aids you in realizing the utmost in the amateur picture field.

EASTMAN KODAK COMPANY
ROCHESTER, N. Y. *The Kodak City*

At your dealer's

It reproduces the ordinary lighting as well as plates—the unusual lighting better than plates and permits of many results that have always been impossible with plates.

EASTMAN PORTRAIT FILM

Par Speed—Super Speed
Uniform Quality

EASTMAN KODAK COMPANY
ROCHESTER, N. Y.

All Dealers'

Please mention "The Camera" when Corresponding with Advertisers

Now $150.00

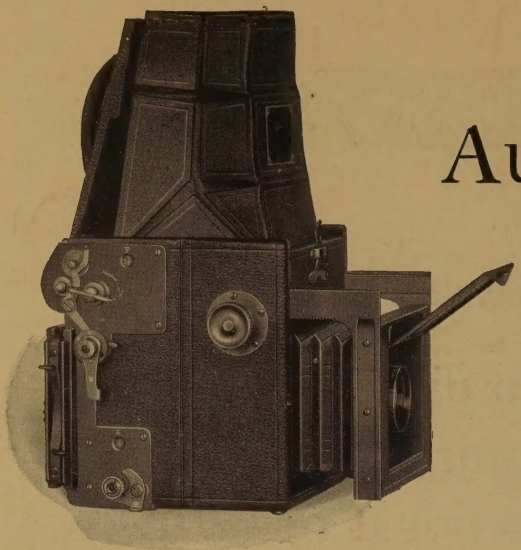
An ideal enlarging device for the Finisher at a very moderate price.

Kodak Projection Printer

A printer, equal in every respect to the larger machines but smaller in size. It takes negatives 4x5, 3¼ x 5½ and smaller and makes prints up to 24 x 32 inches. It is self-focusing, is equipped with the Eastman Projection Anastigmat lens *f*.6.3, and has 100 watt, special lamp and paper holder.

You can double your output of enlargements by the increased speed of the Projection Printer's operation. Kodak Projection Printer complete $150.00 at your dealer's.

EASTMAN KODAK COMPANY
ROCHESTER, N. Y.



Auto Graflex Junior

Carry this little camera—five inches high when closed, forty-four ounces in weight—and you can challenge every picture chance that you meet.

While small in size, the Auto Graflex Junior is big in ability. Reflecting mirror, focal plane shutter, fast lens, mahogany body, morocco cover, oxidized silver-plated fittings are exactly like those that bigger models boast.

Picture size is 2¼ x 3¼ inches, economical to buy film for and large enough for most purposes. When there's need for a bigger print it is easily made from the sharp, sparkling negative that the Kodak Anastigmat *f*.4.5 produces. For this lens equals any in the world.

Twenty-four instantaneous speeds of 1/10 to 1/1000, a slow snapshot of 1/5 and *time*, cover every requirement.

The price of the Auto Graflex Junior with Kodak Anastigmat *f*.4.5 and one cut film holder (plate holder optional) is $62.50, the lowest at which a Graflex with *f*.4.5 lens has ever been offered.

Ask your dealer or write us for Graflex catalog.

EASTMAN KODAK COMPANY

Folmer & Schwing Department Rochester, N. Y.